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AMERICAN RAILWAY TRANSPORTATION

AMERICAN RAILWAY TRANSPORTATION

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PREFACE TO SECOND REVISED EDITION

The rapid progress made by American railroads during the past five years, and the extraordinary amount of regulative legislation enacted by the States and the Federal Government, have made necessary a thorough revision of this volume. The continued sale of the book among railway officials and employees, and, especially, its use as a text with university classes, emphasize the desirability of keeping the information contained in the volume as nearly up to date as possible.

The consolidation of railroads, so characteristic of railway history from 1898 to 1903, has continued during the past five years; and, although the changes in grouping and ownership have been less frequent during the latter half of the decade since the process of integration became rapid, they have been so many and of such importance as to compel a retabulation of "railroads by ownership and territory." The community of interest policy in railway management is becoming more and more fully worked out.

The present edition contains the latest official statistics available in 1908. For the mail service, and to some extent for the freight, passenger, and express business, figures for 1907 were obtainable; but, unfortunately, the final report of the Interstate Commerce Commission for the fiscal year ended June 30, 1907, is not completed until the beginning of 1909. For this reason, it was necessary to base the discussion of traffic and finances largely upon data for the year 1906. In the original

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edition, published in 1903, the corresponding facts were for 1901.

The discussion of State and National legislation in this third edition includes an account of the Hepburn Act of 1906, and, what will doubtless be even more appreciated, a summary of the legislation by the States from 1902 to 1908. With the possible exception of the period of the "granger" laws in the seventies, there has been no other half decade as significant as the past five years have been in the development of State control of railroads and other public-service corporations.

The decisions of the United States courts since 1903 have so modified the relations of legislative and judicial authority as to put a new phase upon the theory of judicial review. Another effect of recent decisions of the Supreme Court has been to enlarge the jurisdiction of the Federal Government, and correspondingly to restrict the authority of the States, over railroads.

The changes in the State and Federal laws regulating railroads have been so numerous, and the effects of judicial decisions have been so fundamental, that the three chapters dealing with those subjects required rewriting in large part. The map of the State Commissions has been redrawn.

The literature upon railway transportation has been enriched during the past five years by numerous valuable papers, monographs, and books. References to the more important of these studies have been added to the lists of works appended to the several chapters, in order that the book may continue to fulfill its original purpose of being "a volume that may profitably precede or accompany a more special study of a particular branch of the railway service."

E. R. J.

July, 1908.

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AMERICAN RAILWAY TRANSPORTATION

CHAPTER I

INTRODUCTION—DEFINITION AND SCOPE OF TRANSPORTATION

TRANSPORTATION has to do with travel, traffic, and communication; it is concerned with the movement of persons and things, and with the transmission of ideas. The term is applied both to the instruments by which movement is accomplished and to the service performed by those agencies. The several instrumentalities—waterways, highways, railroads and the vehicles used upon them, the telegraph and telephone—are spoken of collectively as the transportation system. In the study of transportation attention may be directed either to the system or to the service.

The system is the machine that performs the service, and a study of it is a technical one, covering the engineering problem connected with the construction, maintenance, and operation of the means or mechanism of transportation, and also including the business principles and methods prevailing in the management of the several parts of the various organizations engaged in performing the transportation service. The engineering side of the *technics* of transportation is studied in the civil and mechanical engineering schools, which give instruction in the principles and methods of building the structures and machinery pertaining to each of the several

transportation agencies—instruction in improving rivers, building canals, highways, and railroads; in designing and constructing ships, engines, locomotives, and cars; and in the several branches of electrical engineering. The principles and methods of administration, or the business technics, with the exception of such as may be included in the study of accounting and telegraphy, are as yet but little taught in American schools. They must be mastered in the school of experience. In this regard the education facilities in the United States are somewhat inferior to those in some European countries.

In studying the transportation *service*, only incidental regard need be given either to the agencies which perform the service or to the technics of the administration of those agencies. The purposes of the study are threefold: (1) To understand the nature and scope of the transportation service both as a whole and with such detail as may be necessary to an intelligent consideration of each of the several branches of the service; (2) to analyze the relations of the companies and individuals who perform the services to the users of the service—the relations, actual and desirable, of the carriers and the public; (3) to ascertain the degree and form of supervision or control that the Government should exercise over the relations of the carriers and the public.

In contrast with the technics of transportation, the study of the service may be called the *economics* of transportation—the study which treats of the characteristics of the transportation service, the business relations of the carriers and the public, and the governmental supervision or control of transportation. This study comprises a part of each of two social sciences: political economy or economics and civics or political science.

Political economy, or economics, is the science of business affairs, or, as it is sometimes defined, the science

which treats of the efforts of men to satisfy their wants. Among the manifold instrumentalities men have devised to assist them in the business activities which they carry on to create the wealth whereby their wants are satisfied, transportation agencies have come to be indispensable, and a study of the services performed by those agencies constitutes an important part of the science of business affairs. The position of transportation economics in political economy can be specifically stated by explaining briefly the relation of the transportation service to the production, consumption, exchange, and distribution of wealth.

Production consists in making matter more useful for purposes of consumption. It is the creation of utilities. To give matter the ability to satisfy wants, two things must be done: The commodities must be given the form or the qualities which the user desires them to possess, and the articles must be taken to the user. The form and intrinsic qualities that make matter useful result from agriculture, manufacture, and the various industries by which things are grown and shaped. The transportation service puts commodities in the place where they can be used. An article that has been grown, mined, or manufactured has received only a part of the services by which it becomes useful. Only the intrinsic utilities of form or quality have been created; the usefulness which depends upon the location of the article—its place utilities—has yet to be given it. Place utilities are created by the transportation services, which are thus a part of the general process of production.

The relation of transportation to production may also be shown by considering the general effect which improvements in transportation services have had on the use or consumption of wealth. Men produce commodities, because they want the commodities, because they wish to

hoard up, or use—i. e., "consume"—them; accordingly, what men produce depends upon the kinds, number, and intensity of their wants. From this it follows that any force or influence that changes men's wants will also affect their productive activities. This truth is illustrated by the fact that the uncivilized man will do but little work, because he wants but a few things. The only way to make him work is to create wants in him.

The causes which modify the wants of men, and thus change what they produce and consume, are many, but nothing will do more to create new wants or more intense ones than a decrease in the cost and an increase in the quantity and variety of consumable commodities. The availability of commodities has been multiplied many times by improvements in transportation, and the effect of this upon human wants has unquestionably been great. Indeed, with our present facilities of transportation, there is practically no limit to the number of wants we can satisfy, and our rapidly increasing demands have spurred us on to an ever-widening range of production.

Commerce consists in exchange of commodities between separated localities—it is the agency by means of which the consumer and producer are brought together. The process involves a sale and purchase of goods, their transmission from the seller to the buyer, and the settlement of business accounts. Transportation is one of the mechanisms through which this is accomplished. Among the other agencies of commerce are the stock exchanges, the bourses, the markets, the banks, the trust companies, and insurance companies; but of these several auxiliaries the transportation service is the least dispensable. With the growing subdivision and specialization in productive effort, with the continually increasing tendency to locate industries where they can be carried on most economically, with the constant extension of the

areas from which the materials of industry are drawn and over which the products are marketed, commerce, and particularly that part of commerce which is concerned with the movement of persons and things, becomes of ever greater consequence in all productive enterprises. The production of wealth has been greatly enhanced by the enlargement of commerce, and the extension of commerce has been possible mainly because of the improvements that have been made in the agencies by which the various transportation services are performed.

The relation of transportation to the distribution of wealth is somewhat complex. Wealth is the creation or product of three factors: land or the resources of nature, capital, and human effort, physical and mental. Nature is the source of wealth, capital is the tool, and man is the agent by which the source is drawn upon. The income which men derive from the possession of natural agencies and resources is called rent, that secured from the ownership of capital is termed interest, that obtained from effort is named wages. The income or rent received by the owner of "land" depends upon two things: the productivity or intrinsic characteristics of the land or natural resource, and its location. The rent which owners of agricultural land can command depends upon its fertility and its location with reference to markets; rents from mines and forests are determined by productivity and location; rents on building sites result mainly from location. As far as rent depends upon location, the determining factor is transportation, and every improvement or change in the facilities or costs of transportation services must have an influence upon the total amount of "rent" received by the owners of natural agents and must readjust the distribution of that form of income among its recipients.

The relation of the transportation service to the

income from capital is twofold; the total income from capital has been greatly increased by the modern transportation facilities, but the rate of return has been lowered. Capital is so generally and extensively employed in production to-day, as the result of improved transportation, the use of machinery, and other well-known causes, that we have come to speak of modern productive processes as capitalistic in contrast with those of a hundred years ago, when most things were done by manual labor and when land and labor received nearly all of the income from production. But the accumulation of wealth has been so rapid as to make capital abundant and to cause the rate of interest to decline rather than rise. This fall in the rate of interest, however, has been slower than it would have been had not the opportunities for investment been greatly multiplied by the extension and improvement of the means of transportation.

By wages, the income resulting from human effort, is popularly meant the money payment received by those who toil with hand or brain; but in scientific discussion the word more frequently means the amount of useful commodities received by the workers. The "real" wages of a day's labor are the commodities which a day's labor will secure. Possibly transportation has had no more marked effect than that of increasing the quantity and variety of useful things which come within the range of the toiler's income. The luxuries of past generations have now become necessities, because of the reductions in the costs of production effected by improved transportation and other forces. Furthermore, as the laborer's real wages have increased, his efficiency has become greater and his impulses to effort have been strengthened. To have is to want more, to strive harder. We call this raising the standard of living, the progress of civilization.

As the result of cheap transportation, those who produce have multiplied their wants and their efforts; and with the present highly developed transportation service to aid them, their efforts are far more productive than they would otherwise be. Human effort creates enormously more wealth than was formerly possible. Whether, in the distribution of wealth among the classes who control or contribute to the forces of production, labor or human effort receives an adequate share of the total, is a question concerning which there are differences of opinion. The absolute income of labor is greater than it was when cruder processes of production prevailed, and that income continues to increase; but it is by no means certain that the forces controlling the distribution give labor an equitable share.

The relation of the government, local, State, and Federal, to transportation is such an intimate one that a study of the transportation service necessarily involves a consideration of some duties and activities of the state, subjects covered by the study of government or political science. Indeed, some branches of transportation, as the mail service, are everywhere carried on by the government. The city streets and most country roads are highways maintained at public expense; and the commercially important lakes, streams, and harbors are usually improved and maintained wholly or partially by the use of public funds. Canals are sometimes private enterprises, but more often are state works. Street-railways, especially in Europe, are frequently owned by the cities, and sometimes are operated by them. In many countries the steam-railroads are owned and managed by the government, and in all countries where private ownership prevails the railroad service is subject to government regulation. The telephone service has thus far usually been conducted by private companies.

Whether performed by the government, or by companies, or by individuals, the transportation service is of a public nature. This is a well-established principle of law, the Supreme Court of the United States having held that "the business of a public carrier is of a public nature, and in performing it the carrier is also performing to a certain extent a function of government which requires him to perform the service upon equal terms to all." The principle applies as much to railroads built and operated by corporations as to other transportation agencies. "Whether the use of a railroad is a private one depends in no measure upon the question who constructed it or who owns it. It has never been considered a matter of any importance that the road was built by the agency of a private corporation. No matter who is the agent, the function performed is that of the state. Though the ownership is private, the use is public." [1]

The general basis of this principle is the vital dependence of the social organization upon transportation. A service must be of a public nature that is essential to orderly human relations, to all industrial activities, and the progress and welfare of society. The public nature of the transportation services of railroads and some other carriers is recognized by the state in the granting of franchises giving to such carriers the power to take possession of the private property they may need. "The state," to quote the language of the United States Supreme Court, "would have no power to grant the right of appropriation unless the use to which the land was to be put was a public one. Taking land for railroad purposes is a taking for a public purpose, and the fact that it is taken for a public purpose is the sole justification for taking it at all." [2]

[1] Olcott *vs.* The Supervisors, 16 Wallace, 695.

[2] United States *vs.* Joint Traffic Association *et al.*, 171 U. S., 505.

In studying the transportation service, then, we are dealing with one of the functions of government, and one of the important branches of political science. In considering this service the student is concerned with the government at work either performing the service directly or insuring its proper performance by persons and corporations receiving from the state their authority to act, and subject in their actions to the regulative control of the government. The problems of the Government ownership, operation, and regulation of the agencies of transportation require the investigator to inquire into some most interesting questions regarding the functions of government and the proper scope of its activities.

This volume is concerned with the transportation service performed by steam or trunk-line railroads. It does not discuss the engineering and other technical questions of railroad construction and operation, but describes the American railroad system, gives an account of the service performed by the different branches of the railroad organization, considers the business relations of the railroads and the public, and discusses the problems of government regulation. The book is a study in railway economics, and is intended to be an introduction to the general subject of railroad transportation, a volume that may profitably precede or accompany a more special study of a particular branch of the railway service.

PART I

THE AMERICAN RAILWAY SYSTEM

CHAPTER II

ORIGIN OF THE AMERICAN RAILWAY

Until the fourth decade of the nineteenth century the inland highways of travel and trade were wagon roads, rivers, and canals. As compared with Europe the United States was poorly equipped with these means of transportation, because the newness of the country, the sparseness of population, and the undeveloped state of our industries had kept both the government and individuals from devoting to the building of roads and waterways the meager volume of capital available for investment. In the construction of railroads the United States was preceded only by Great Britain, but in the building of highways and waterways our country was led by several European countries, and is even now behind them in that regard.

Until near the end of the eighteenth century the country roads constructed in America were built and maintained by the local governments—that is, by the towns in New England, the townships in the Middle Atlantic section, and the counties in the south. With the growth of population and business these highways became so inadequate that corporations of individuals began the construction of roads and charged tolls for their use. These roads were called turnpikes, because at the places where tolls were collected there was placed across the road a gate consisting of a pole armed with pikes and so hung as to turn upon a post.

The construction of toll roads began soon after 1790, and numerous turnpike companies were chartered by each State, particularly by the Middle and New England States. The greatest mileage was built in Pennsylvania, and what was done in that State is typical of what occurred in many other parts of the country. In 1790 a company was chartered to build a turnpike from Philadelphia to Lancaster, and this road, begun in 1792, was completed in 1794. Later this road became a part of a continuous line of turnpikes extending from Trenton to Steubenville, on the Ohio River, a distance of 343 miles. Before the construction of railroads began in this country, 102 Pennsylvania companies had built 2,380 miles of roads in that State at a cost of nearly $8,500,000. Although these toll roads did not, as a rule, prove to be very profitable to the companies which built them, they were of great benefit to the people of the State. Some of these turnpikes are still operated as toll roads, although most of them have very properly become free public highways.

Some turnpike roads were built with funds donated by the States and the Federal Government at the time when public aid was being given to works of "internal improvement." The most celebrated turnpike was the Cumberland Road, or the "National Pike," constructed by the United States. It was begun in 1806, and was built westward from Cumberland, Md., through Wheeling and Columbus, and finally, twenty-one years later, after having been extended from time to time, it reached Vandalia, in central Illinois. It was to have gone through to Jefferson City, Mo., but before Illinois had been passed the superiority of the railroad for long-distance traffic had become an accepted fact.

Surveys of canal routes were made in Pennsylvania as early as 1762. In 1772 General Washington called

attention to the importance of constructing canals and improving the rivers of the country. He was particularly desirous that the Atlantic coast section should be connected by a through route with the region west of the Alleghany Mountains. It was, however, not until

The Stage-Coach, generally used for Passenger Travel before the Introduction of the Railroad.

1825, twenty-six years after the death of Washington, that this was accomplished by the completion of the Erie Canal, connecting the Hudson River and Lake Erie. Although numerous companies were chartered during the decade ending in 1812, little was done to improve inland

The Conestoga Wagon, the Predecessor of the Freight-Car in the Middle Atlantic States.

navigation until after the War of 1812 to 1815, when several corporations began energetically the work of connecting the anthracite coal-fields with tide-water by means of canals and canalized rivers. The States aided

these and other navigation companies, and attention was directed, especially by New York, Pennsylvania, and Maryland, to the project of securing routes to the West. In this New York was the first to succeed by means of the Erie Canal, which was begun in 1817 and finished in 1825. The transportation system of canals and railroads in the States of New York and Pennsylvania in 1840 is shown by the accompanying charts, giving data taken from Tanner's maps of that date.

The opening of the Erie Canal roused Pennsylvania to action, and in 1826 she began her system of "public works," the main feature of which was a composite rail and water route, completed in 1834, connecting Philadelphia with Pittsburg. A railroad ran from Philadelphia to the Susquehanna River at Columbia, then a canal extended up the Susquehanna and Juniata Rivers to Hollidaysburg. Between Hollidaysburg and Johnstown the canal-barges were carried over the mountains by a portage railroad; a canal connected Johnstown and Pittsburg, at which point junction was made with the Ohio River steamboats.

A corporation aided by the States of Maryland and Virginia began to construct the Chesapeake and Ohio Canal in the Valley of the Potomac at the same time that Pennsylvania undertook her public works, but it was 1850 when the Chesapeake and Ohio Canal reached Cumberland. Between 1830 and 1850 Ohio, Indiana, Illinois, and numerous other States constructed canals or aided corporations to build them, but the railroad had made its appearance and had begun to make the further construction of small barge canals inadvisable. Canal building rapidly fell off after 1840. The panic of 1837 so crippled the financial resources of the States that they were temporarily left without surplus funds to invest in internal improvements; at the same time the railroads

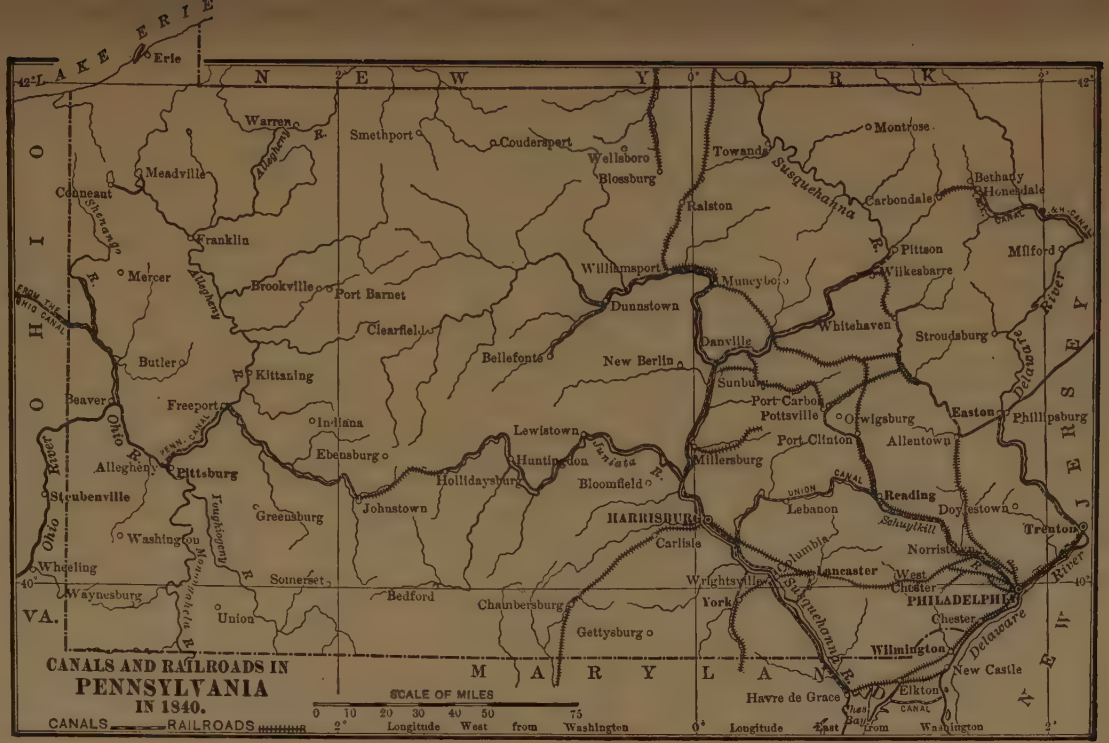
CANALS AND RAILROADS
IN
NEW YORK
IN 1840.
CANALS
RAILROADS
SCALE OF MILES
0 10 20 30 40 50 75
Longitude 2° West from Washington 0° Longitude East from Washington 2°
CANADA
LAKE ONTARIO
LAKE ERIE
PENNSYLVANIA
VERMONT
MASS.
CONN.
ATLANTIC OCEAN
LONG ISLAND SOUND
Port Dalhousie
Niagara Falls
Fort Maitland
Buffalo
Lockport
Albion
Batavia
Port Genesee
Rochester
Lyons
Waterloo
Canandaigua
Genesee
Pen Yan
Dansville
Crooked L.
Bath
Angelica
Mayville
Chautauqua Lake
Ellicottville
Painted Post
Elmira
Owego
Catharinestown
Ithaca
Cortlandt
Norwich
Binghamton
Delhi
Cooperstown
Schoharie
ALBANY
Troy
Schenectady
Utica
Rome
Whitesboro
Herkimer
Northumberland
Johnstown
Ballston Spa
Salem
Caldwell
Sandy Hill
Lake George
Rutland
Bennington
Pittsfield
Hudson
Catskill
Kingston
Monticello
Poughkeepsie
Newburg
Goshen
Bedford
New City
Fairfield
Hackensack
Newark
Brooklyn
NEW YORK
Hicksville
Jamaica
Richmond
Riverhead
New Haven
Hartford
Carthage
Watertown
Martinsburg
Pulaski
Oswego
Onondaga
Onsula L.
West Hills
Morrisville
Auburn
Cayuga
Seneca
Tioga R.
Chenango R.
Delaware R.
Hudson River
Connecticut River
Black R.
Allegheny R.
Genesee R.
ERIE CANAL
CANAL
WELLAND CANAL
44°
42°
2°
4°

were being extended rapidly and were taking the traffic that had previously moved by water. The use of rivers and canals did not stop with the spread of the railway system, nor have we yet ceased to find the inland waterways serviceable; but at the present time only the large lakes and rivers and the most important canals are able to hold their traffic in competition with the railroads.

The railroad at the beginning was an improved tramway equipped with a track upon which locomotives could be run. The distinctive feature of the railroad was the substitution of mechanical for animal traction (the use of steam instead of muscle as the power by which vehicles were moved), and, although the first locomotives were small and crude, their use as an agent of transportation marks one of the greatest advances the world has ever made. Mechanical traction freed society from the narrow limitations which muscular force placed upon human development, and gave man possession of an agency capable of indefinite improvement.

The construction of tramways for cars drawn by horses was a comparatively simple task, and, from 1801 on, tramway companies were frequently chartered in England. The tracks were used mainly for hauling minerals. The Quincy tramway, the first road of its kind in America—built in Massachusetts in 1826 and sometimes wrongly called the first railroad in America—was used to transport the building-stone of which Bunker Hill monument was erected. It was only three miles in length, and extended from the Quincy quarries to a wharf on the Neponset River. Near the quarry there was a steep incline, up and down which the cars were handled by a stationary engine; for the remainder of the distance horses were used.

The rails used on the tramways and on most of the early railroads of America consisted of wooden beams



CANALS AND RAILROADS IN PENNSYLVANIA IN 1840.

with a strap of iron nailed to the upper surface, the rails being very similar to those most frequently used for street-railways until horse-cars were displaced by the heavier electric cars run at a higher rate of speed.

THE ROCKET, 1829.

The successful locomotive dates from 1829, at which time the celebrated English engineer Stephenson brought out the Rocket. The stationary engine had been introduced by Watt fifty years before that time, but it was Stephenson who first incorporated in the engine the two features essential to a workable locomotive. One of these two features was the multitubular boiler, by which the heating surface is greatly increased. Stephenson was not the inventor of this, but was the first to make practical use of the invention. The other feature was the exhaust draft, the device whereby the exhaust steam from the cylinder created a stronger draft through the fire-box and the tubes of the boiler. By combining these two

principles in the Rocket, Stephenson became the "father of the locomotive." At the trial test, in October, 1829, on the Liverpool and Manchester Railroad, the Rocket attained a speed of 29 miles an hour and the practicability of mechanical traction became a demonstrated fact. The day of doubtful experiment was past, the tramway became the railroad.

The first railroad in England, the line between Liverpool and Manchester, was begun in 1826—three years before the success of the locomotive was assured. At Mauch Chunk, Pa., in 1827, and between Carbondale and Honesdale, in the same State, in 1826, two coal companies had opened roads for the transportation of their coal from the mines to their canals. These mountain roads were built for private use, and the cars were operated by the force of gravity and by means of stationary engines. They were not railroads in the present meaning of the term. The pioneer American railroad built for general public use was the Baltimore and Ohio. The company was chartered in 1827 and construction was begun in 1828, but not on a large scale, there being only 13 miles open for traffic in 1830. Five years later the length of the road was 135 miles. The first rail of this historic road was laid on July 4, 1828, by Charles Carroll, the only living signer of the Declaration of Independence. As Professor Hadley, writing in 1885, stated: "One man's life formed the connecting link between the political revolution of the last century and the industrial revolution of the present."

The construction of numerous other roads was begun shortly after work commenced on the Baltimore and Ohio. A South Carolina road, the Charleston and Hamburg, was chartered in 1829, and in 1834 it had 137 miles in operation. For a short time it was the longest line in the world under one management. The parent company

of the New York Central system, the Mohawk and Hudson, was chartered as early as 1826, and began construction in 1830. The line from Albany to Schenectady, 17 miles, was opened in 1831. Five years later Albany and Utica had been connected by rail. In 1842 Buffalo was reached, and by that time lines had been built from New York and Boston to Albany, so that the East and the West of that period had been joined by easy communication by way of the railroads and the Great Lakes.

Between 1830 and 1835 railroad building was pushed more rapidly in Pennsylvania than in any other State, 200 miles being opened. The first division of the present Pennsylvania Railroad system was the Columbia Railroad, by which Philadelphia was connected with Columbia, on the Susquehanna River, in 1834. The road was built by the State, its construction having been authorized in 1828. This railroad was a link in the through route above referred to, consisting of canals and railroads, by which the State connected Philadelphia with the Ohio River at Pittsburg in 1834. The line to connect Philadelphia with New York, the Camden and Amboy, was chartered in 1830 and completed in 1837. The road from Philadelphia to Baltimore, the Philadelphia, Wilmington and Baltimore, was chartered in 1831 and finished in 1837. The Reading Railroad, built mainly for the transportation of coal, was chartered in 1833 and opened for traffic five years later.

In Massachusetts the chartering of railroad companies began in 1830, and in 1835 three lines radiated from Boston. One ran south to Providence, another north to Lowell, and a third west to Worcester. This third line reached Albany and Western connections just at the close of 1841.

Americans began to build locomotives in 1830, or about as soon as they engaged in railroad building. The

English locomotives were expensive, they could not be secured promptly, and when obtained they were not well adapted to the light rails, steep grades, and sharp curves of the American tracks. The traffic conditions caused the engines and cars to be built according to designs different from those followed in Great Britain, and the differences in equipment are quite as pronounced to-day as they were at the beginning.

REFERENCES FOR FURTHER READING

TANNER, H. S. A Description of the Canals and Railroads of the United States, comprehending Notices of all the Works of Internal Improvement throughout the Several States. 1840.

HADLEY, A. T. Railroad Transportation, chapters i and ii. 1885.

ADAMS, CHARLES FRANCIS. Railroads: Their Origin and Problems. 1878. [The first third of the book gives the story of the "genesis of the railroad system."]

POOR, H. V. Manuals of the Railroads of the United States. The volume for the year 1881 contains a sketch of the Rise and Progress of Internal Improvements.

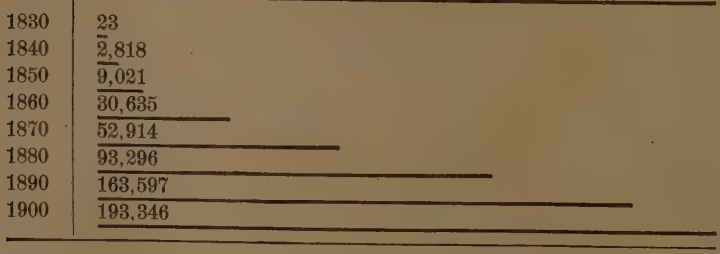
Tenth Census of the United States. Vol. iv contains a history of the canals of the United States.

CHAPTER III

GROWTH OF THE AMERICAN RAILWAY NET

THE accompanying chart shows what the railway mileage of this country has been at the beginning of each decade since the introduction of the new means of transportation. In 1830 there were but 23 miles in use. During the succeeding ten years the total mileage reached 2,818. The account just given of the early history of American railroads shows that the roads constructed during the first ten years radiated from several Atlantic seaports, Philadelphia being the most important center in 1840.[1] New York was a larger city, but having especially favorable facilities for water transportation, its railway connections were developed somewhat slower than were those of Philadelphia.

Chart showing Mileage by Decades of the Railways of the United States



In the year 1850 the length of the railways in the United States reached 9,021 miles. The growth during

[1] Consult map of Pennsylvania's railroad net in 1840.

MAP OF THE UNITED STATES
SHOWING RAILROADS
IN 1850.
SCALE OF MILES
0 100 200 300 400 500
BRITISH POSSESSION
OREGON TERRITORY
UNORGANIZED
MINNESOTA TERRITORY
UTAH TERRITORY
NEW MEXICO TERRITORY
TEXAS
MEXICO
GULF OF MEXICO
PACIFIC OCEAN
ATLANTIC OCEAN
WISCONSIN
IOWA
ILLINOIS
MISSOURI
ARKANSAS
KENTUCKY
TENNESSEE
MISSISSIPPI
LOUISIANA
ALABAMA
GEORGIA
SOUTH CAROLINA
NORTH CAROLINA
VIRGINIA
WEST VIRGINIA
OHIO
INDIANA
MICHIGAN
PENNSYLVANIA
NEW YORK
VERMONT
NEW HAMPSHIRE
MAINE
MASS.
CONN.
R. I.
DEL.
MD.
WASHINGTON
Sacramento
San Francisco
Salt Lake City
Santa Fe
Austin
Galveston
New Orleans
Mobile
Pensacola
Natchez
Vicksburg
Memphis
Nashville
Knoxville
Chattanooga
Atlanta
Montgomery
Columbia
Raleigh
Richmond
Norfolk
Wilmington
Charleston
Savannah
Augusta
Milledgeville
Macon
Columbus
Tallahassee
St. Paul
Milwaukee
Chicago
Detroit
Cleveland
Buffalo
Albany
Utica
Syracuse
Rochester
Boston
Providence
New Haven
New York
Trenton
Philadelphia
Pittsburg
Harrisburg
Wheeling
Cincinnati
Indianapolis
Louisville
Springfield
Naples
Kansas City
St. Louis
Davenport
Little Rock
Memphis
Portland
Bangor
Quebec
Montreal
Kingston
Toronto
Hamilton
Niagara
Lake Superior
Lake Michigan
Lake Huron
Lake Erie
Lake Ontario
Columbia R.
Yellowstone R.
Missouri R.
Platte R.
Arkansas R.
Canadian R.
Red R.
Colorado R.
Rio Grande
Brazos R.
Mississippi R.
Ohio R.
St. Lawrence R.
Connecticut R.
Hudson R.

the preceding ten years had not been especially rapid outside of the New England States. The decade 1840 to 1850 was not a period of rapid industrial development. The progress of the country was steady, but comparatively slow. Railroad building in the Southern States made little headway, and in the Central West only three important lines were begun. In New England, where the country was most thickly populated, the progress was greater, so that by 1850 nearly all the present important trunk lines in that section had been completed.

The ten years following 1850 were far more important in railroad history than were those of the preceding decade. The increase between 1850 and 1860 was from 9,021 to 30,635 miles. Several facts combined to give prominence to the years immediately following 1850. The Southern and Central Western States were developing, and thereby creating a demand for greater transportation facilities. From the discovery of gold in California in 1848 until 1857 the people of the United States enjoyed highly prosperous times. Business activity in all lines was keen, and railroad building shared with other enterprises in the results of prosperity.

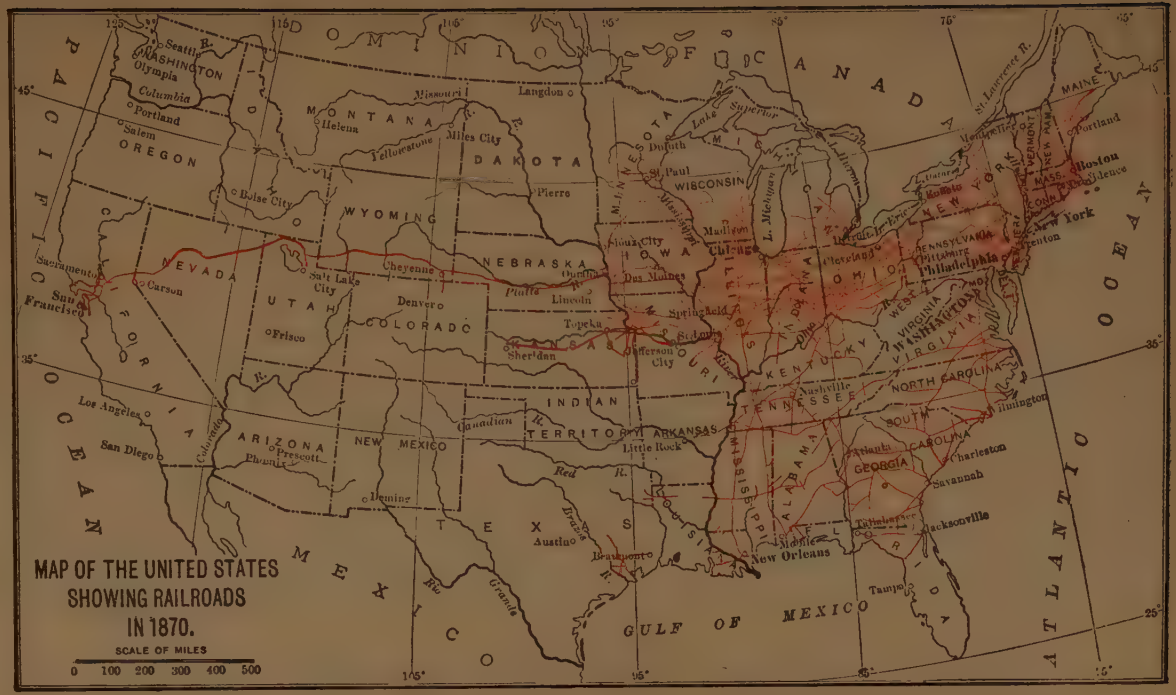
The year 1850 marks the beginning of a rapid welding of short connecting railroads into long lines under a single ownership. The early roads were short, largely because the corporations of the third and fourth decades of the last century could not command the capital needed to build long roads or large systems. No enterprise now seems too great for a private corporation, but sixty years ago that was not so. Some of the short roads were built with reference to their being a part of a through or general system, but many were constructed rather to connect local points. The necessity for providing facilities for uninterrupted travel and shipment

became so imperative that railway consolidations were found to be necessary.

The New York Central and the Pennsylvania Railroads are good examples of these consolidations. Originally eleven companies owned and operated the railroads composing the line connecting Albany and Buffalo, and in 1850 there were seven distinct companies between those two cities; but the following year they were united under one management. Two years later the Hudson River Railroad became a part of the Central system, and by 1858 five more lines were added to this property. Thus was built up the powerful New York Central system.

The Pennsylvania Railroad Company, partly by construction of roads and partly by the purchase and lease of State lines, established through connections between Philadelphia and Pittsburg in 1852. Since then the system has been extended by absorbing other companies and by building new lines, until it now comprises properties formerly owned by more than 200 companies.

During the decade following 1850 many of the trunk lines of the large railway systems of the present day were completed. The Erie Railroad joined New York and Lake Erie in 1851, and the Baltimore and Ohio reached the Ohio River the same year. The construction of long lines proceeded rapidly in the States east of the Mississippi River and north of the Ohio. By 1853 it had become possible to travel from the Atlantic seaboard to Chicago by rail. In the following year the Chicago and Rock Island connected Chicago with the Mississippi River. Land grants, State subsidies, and prosperous times combined to foster the rapid spread of the railway net in the Middle West. This lasted until 1857, when the good times were interrupted by a panic. Railroad building was then so seriously interrupted that it had not


MAP OF THE UNITED STATES
SHOWING RAILROADS
IN 1870.
SCALE OF MILES
0 100 200 300 400 500
DOMINION OF CANADA
PACIFIC OCEAN
ATLANTIC OCEAN
GULF OF MEXICO
MEXICO
WASHINGTON
OREGON
CALIFORNIA
NEVADA
UTAH
ARIZONA
COLORADO
WYOMING
MONTANA
IDAHO
NEW MEXICO
DAKOTA
NEBRASKA
KANSAS
INDIAN TERRITORY
TEXAS
MINNESOTA
IOWA
MISSOURI
ARKANSAS
LOUISIANA
WISCONSIN
MICHIGAN
ILLINOIS
INDIANA
OHIO
KENTUCKY
TENNESSEE
MISSISSIPPI
ALABAMA
GEORGIA
FLORIDA
SOUTH CAROLINA
NORTH CAROLINA
VIRGINIA
WEST VIRGINIA
PENNSYLVANIA
NEW YORK
VERMONT
NEW HAM.
MAINE
MASS.
CONN.
DEL.
MD.
Seattle
Olympia
Portland
Salem
Boise City
Helena
Miles City
Langdon
Pierre
Cheyenne
Salt Lake City
Denver
Frisco
Sacramento
San Francisco
Carson
Los Angeles
San Diego
Prescott
Phoenix
Deming
Austin
Brazos
Rio Grande
Red R.
Canadian R.
Platte R.
Missouri R.
Yellowstone R.
Lake Superior
Duluth
St. Paul
Madison
Chicago
Sioux City
Des Moines
Lincoln
Topeka
Sheridan
Jefferson City
Springfield
St. Louis
Little Rock
Nashville
Atlanta
Savannah
Charleston
Wilmington
Jacksonville
Tallahassee
Mobile
New Orleans
Tampa
Cleveland
Pittsburg
Philadelphia
Trenton
New York
Boston
Providence
Portland
Montpelier
St. Lawrence R.
L. Huron
L. Michigan
Mississippi
Ohio
Kansas
Columbia
Colorado
Brazos
Rio Grande

regained its previous activity when the great civil war stopped nearly all industrial progress for half a decade.

The construction of railroads in Illinois and beyond the Mississippi River was greatly stimulated by grants of land from the public domain. In 1850 the first large grant was made, the Illinois Central Railroad being the recipient, but many other gifts of land were made during the next few years. This policy of giving lands to aid in railroad construction was followed by the United States for nearly thirty years, and it caused the railway lines in the Central and far Western States to be built earlier and more rapidly than they otherwise would have been. The States also made large contributions of public funds to induce corporations to construct railways.

The United States Government made especially liberal gifts to the companies that undertook the great task of building roads across the dry plains and high mountains to the Pacific coast. The first line reached the Pacific in 1869 and was constructed mainly by the Union and Central Pacific Railroad Companies. The location of the road is shown on the map of the railways of 1870. These and other Pacific railroad companies received large gifts of public land. The companies that constructed the first line to the Pacific also obtained large loans from the Government in the form of United States bonds. The history and results of the Government aid to railroads are given in Chapter XXII.

During the decade 1860–'70 the mileage of the railways in the United States increased from 30,635 to 52,914, the rate of growth being slow except during the last two years of the period. From 1868 to the panic of 1873 was a period of intense speculation and of very rapid railway construction; indeed the severe business crisis of 1873 was largely the result of building railways too rapidly and of overcapitalizing the lines constructed. Dur-

ing these five years 28,000 miles were added to the railway net of the country, while in the five years following 1873 only 11,500 miles were built.

In 1880 there were 93,296 miles of railroad in the United States. In 1890 there were 163,597; 70,000 miles of railroad were built in this country in a single decade! This marvelous achievement is unparalleled in the economic history of any other country of the world. Within ten years the people of the United States built as many miles of railroad as the people of the three leading countries of Europe had constructed in fifty years. The building operations were carried on in all sections of the country, but the largest increases were made in the States of the central and western portions of the country, where settlers were rapidly taking possession of the unoccupied agricultural and grazing sections of the vast public domain, and where the mineral wealth of the Cordilleras was causing cities and States to be established on the great Rocky Mountain plateau. Capitalists, confident of the growth of the country, and assisted by generous aid from the United States and from the local governments and individuals of the sections to be served, constructed railroads for the purpose of creating the traffic upon which the earnings of the roads must depend. In many cases the railroads built during the twenty years following the civil war were pioneers entering unsettled regions beyond the Mississippi and Missouri Rivers and opening the highways by which immigration was able rapidly to occupy the prairies and mountain valleys of our great West.

Since 1890 railroad construction has not been rapid in this country, the increase for the decade ending in 1900 being something less than 30,000 miles. It seems that by 1890 the most urgent needs for railways had been met, that the country had been so well covered with the

MAP OF THE UNITED STATES
SHOWING RAILROADS
IN 1880.
SCALE OF MILES
0 100 200 300 400 500
DOMINION OF CANADA
PACIFIC OCEAN
ATLANTIC OCEAN
GULF OF MEXICO
MEXICO
WASHINGTON
OREGON
CALIFORNIA
NEVADA
IDAHO
MONTANA
WYOMING
UTAH
COLORADO
ARIZONA
NEW MEXICO
DAKOTA
NEBRASKA
KANSAS
INDIAN TERRITORY
TEXAS
MINNESOTA
IOWA
MISSOURI
ARKANSAS
LOUISIANA
WISCONSIN
ILLINOIS
MICHIGAN
INDIANA
OHIO
KENTUCKY
TENNESSEE
MISSISSIPPI
ALABAMA
GEORGIA
FLORIDA
SOUTH CAROLINA
NORTH CAROLINA
VIRGINIA
WEST VIRGINIA
PENNSYLVANIA
NEW YORK
MAINE
VERMONT
NEW HAMPSHIRE
MASS.
CONN.
Olympia
Spokane
Wilkes
Columbia
The Dalles
Ellendale
Salem
Roseburgh
Dixie City
Redding
Sacramento
San Francisco
Carson
Ogden
Salt Lake City
Frisco
Denver
Cheyenne
Pueblo
Trinidad
Alamosa
Santa Fe
Los Angeles
San Diego
Colorado
Phoenix
Tucson
Canadian
Arkansas
Red Fork
Topeka
Kansas City
Springfield
St. Louis
Missouri
Helena
Yellowstone
Missouri
Langdon
Pierre
Platte
Des Moines
Chicago
Milwaukee
Lake Michigan
Lake Superior
St. Paul
Duluth
Detroit
Lake Erie
Cleveland
Pittsburg
Buffalo
Indianapolis
Louisville
Cincinnati
Richmond
Lynchburg
Wilmington
Columbia
Charleston
Savannah
Atlanta
Montgomery
Jackson
Vicksburg
Mobile
New Orleans
Houston
Galveston
San Antonio
Rio Grande
Red R.
Brazos R.
Colorado R.
Arkansas R.
Missouri R.
Mississippi R.
Ohio R.
Tennessee R.
Cumberland R.
Alabama R.
St. Lawrence R.
Hudson R.
Albany
Utica
Rochester
Syracuse
Trenton
Philadelphia
New York
Boston
Providence
Portland
Maine
Lat. 45°
Lat. 35°
Lat. 25°
Long. 125°
Long. 115°
Long. 105°
Long. 95°
Long. 85°
Long. 75°
Long. 65°

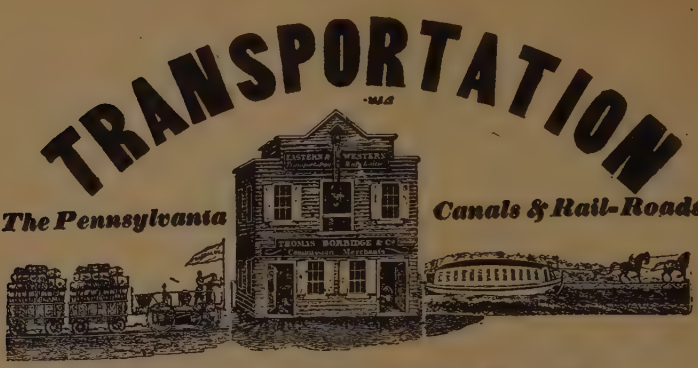
railroad net that only minor extensions were necessary. Moreover, the financial depression which began in 1893 and lasted for nearly five years compelled the railway companies to practise rigid economies and caused them to extend their systems slowly. During the five years from 1894 to 1898 inclusive the annual construction averaged less than 2,000 miles, the yearly increase being only a little more than one per cent. With the return of prosperous times in 1898 the rate of increase rose again, so that there are now being about 5,000 miles, or more than two per cent, added each year to the railroad net of the United States.

The railway systems of the United States now comprise over 230,000 miles of line. In 1906, when there were 222,000 miles in the United States, the railways of the entire world were 562,000 miles long. Somewhat over two-fifths of the railway mileage of the world was in the United States. The mileage in the United States exceeded that in all Europe by more than fifteen per cent.

The Railway Mileage of Europe, the United States, and the World in 1906

Europe	192,000
United States	222,000
The world	562,000

The magnitude of the railway system of the United States is only partially indicated by the figures as to mileage. The par value of the capital stocks and bonds comprising the capitalization or "securities" of the railroads in this country amounted to $14,570,000,000 in 1906. Not all of these securities had a selling value, and it is not possible to say just how much capital was actually invested in our railroads at that time. Poor's Manual of Railroads for 1900 states the cost of the railroads



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Their arrangements are such, that they can at all times during the Business Season, forward Goods, Produce, and Merchandize, to and from Philadelphia, Pittsburg, Williamsport, Wilksbarre, and all intermediate places on the Pennsylvania Canals and Rail Roads with promptness and despatch.

ALL KINDS OF

GOODS AND PRODUCE

Received and Sold on Commission, and liberal advances made if required.

CONSTANTLY ON HAND LARGE SUPPLIES OF

ANTHRACITE AND BITUMINOUS COAL.

ALSO,

FISH, SALT, & PLASTER.

ALL OF WHICH THEY WILL SELL LOW FOR CASH OR COUNTRY PRODUCE.

Columbia, Lancaster County, Pa. March 1, 1835.

YOUNG, PRINTER, PHILADA.

AN ADVERTISEMENT ILLUSTRATING THE TRANSPORTATION SERVICE IN 1835.

in the United States to have been in excess of $10,000,000,000, and estimates the value of all railroad assets in that year at about $12,500,000,000.[1] Commenting on these figures, the Report of the Industrial Commission says:

"Accepting these estimates provisionally, and also

[1] An investigation recently made by the Interstate Commerce Com-

MAP OF THE UNITED STATES
SHOWING RAILROADS
IN 1890.
SCALE OF MILES
0 100 200 300 400 500
DOMINION OF CANADA
PACIFIC OCEAN
ATLANTIC OCEAN
GULF OF MEXICO
MEXICO
WASHINGTON
OREGON
CALIFORNIA
NEVADA
IDAHO
MONTANA
WYOMING
UTAH
ARIZONA
NEW MEXICO
COLORADO
NORTH DAKOTA
SOUTH DAKOTA
NEBRASKA
KANSAS
OKLAHOMA
TEXAS
MINNESOTA
IOWA
MISSOURI
ARKANSAS
LOUISIANA
WISCONSIN
ILLINOIS
MICHIGAN
INDIANA
OHIO
KENTUCKY
TENNESSEE
MISSISSIPPI
ALABAMA
GEORGIA
FLORIDA
SOUTH CAROLINA
NORTH CAROLINA
VIRGINIA
WEST VIRGINIA
PENNSYLVANIA
NEW YORK
MAINE
VERMONT
NEW HAMPSHIRE
MASS.
Seattle
Tacoma
Portland
Salem
Helena
Miles City
Duluth
St Paul
Boise City
Pierre
Sioux City
Omaha
Lincoln
Cheyenne
Salt Lake City
Denver
Leadville
Sacramento
San Francisco
Carson
Frisco
Topeka
Kansas
Santa Fe
Canadian
Los Angeles
San Diego
Prescott
Phoenix
Yuma
Red R.
Jacksboro
Austin
Houston
Galveston
New Orleans
Chicago
Milwaukee
Lake Superior
Lake Michigan
Peoria
Springfield
St Louis
Cairo
Cincinnati
Louisville
Nashville
Memphis
Little Rock
Jackson
Mobile
Montgomery
Atlanta
Charleston
Savannah
Jacksonville
Tallahassee
Tampa
Key West
Cleveland
Pittsburg
Philadelphia
Buffalo
L. Ontario
L. Erie
Albany
Boston
New York
Providence
Portland
Dover
Richmond
Wilmington
Denton
St. Lawrence R.
Missouri R.
Mississippi R.
Ohio R.
Rio Grande

PIONEER

FAST LINE,

BY RAIL ROAD CARS AND CANAL PACKETS,

From Philadelphia to Pittsburgh,

THROUGH IN 3½ DAYS:

AND BY STEAM BOATS, CARRYING THE UNITED STATES' MAIL,

From PITTSBURGH to LOUISVILLE.

Starts every morning, from the corner of Broad & Race St.

In large and splendid eight wheel cars, via the *Lancaster and Harrisburg Rail Roads*, arriving at the latter place, at 4 o'clock, in the afternoon, where passengers will take the Packets, which have all been fitted up in a very superior manner, having been built *expressly for the accommodation of Passengers*, after the most approved models of Boats used on the Erie Canal, and are not surpassed by the Boats used upon any other Line.

The Boats are commanded by old and experienced Captains, several of whom have been connected with the Line for the two last seasons. For speed and comfort, this Line is not excelled by any other in the United States.

Passengers for Cincinnati, Louisville, Natchez, Nashville, St. Louis, &c.

Will always be certain of being taken on without delay, as this Line connects with the Boats at Pittsburgh, carrying the Mail

OFFICE, N. E. CORNER OF FOURTH AND CHESNUT ST.

For seats apply as above, and at No. 200 Market Street; at the White Swan Hotel, Race Street; at the N. E. corner of Third and Willow Streets No. 31 South Third Street; and at the West Chester House, Broad Street

Philadelphia, April, 1837.

A. B. CUMMINGS, Agent.

Young, Printer, Black Horse Alley, Philadelphia

AN ADVERTISEMENT SHOWING WHAT THE TRANSPORTATION SERVICE WAS IN 1837.

the estimate of the total wealth of the United States in 1900 at about $90,000,000,000, it appears that investments in railroad property form from one-seventh to one-fifth of the aggregate capital. This is based upon the assumption that railroad securities at par represent the value of the property. Judged by market values at the present time, this amount would be considerably increased, approximating perhaps the estimate made by Edward Atkinson before the Cullom Committee in 1886, that the railroads formed about one-fifth of the total wealth of the country. If we accept the estimate recently made in a foreign financial journal of the cost of railroad property the world over at $33,000,000,000, it would seem that the American railroads constitute more than one-third of the railroad property of the world." [1]

Comparisons with the capital invested in other forms of business are suggestive. The capital stock and surplus of all the 6,137 national banks in the United States in 1906 equaled $1,325,000,000—less than one-tenth the probable value of the American railroads. The total capital and the surplus funds of all the banks—national, State, and private—and of the loan and trust companies in the United States in 1906 amounted to $2,796,000,000, about one-fifth the value of the railroads. Indeed, with the exception of agriculture, there is no single class of industry that equals the railroads in the amount of invested capital and in the value of the annual business done. Although it now costs but a small fraction of what it once did to transport persons and commodities a given distance, the amount of travel and traffic have so

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mission would indicate that the market value of railroad *securities* in 1900 was much less than this sum. See p. 84, Chapter VII. The values of the assets and the securities would not necessarily be the same, but the figures here given must be taken only as an estimate.

[1] Vol. xix, 1902, pp. 261, 262.

enormously increased, the demand for the service is now so many times what it was before the days of the railroad and other economical agencies for transportation, that the capital employed in transportation is far greater than in the days of the stage-coach and the towboat. The cheaper the service, the greater its magnitude and the larger the amount of capital devoted to the performance of the service.

REFERENCES FOR FURTHER READING

Scribner's Statistical Atlas, Plates 15–17 and text page cvii.

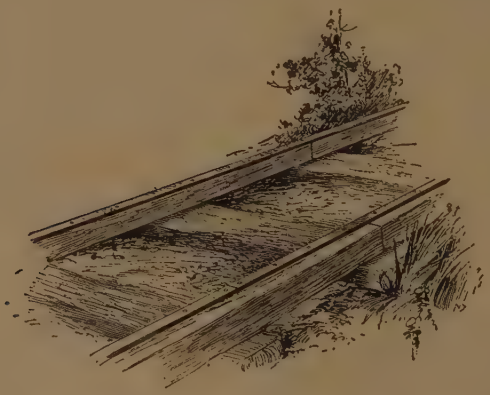
Hadley, A. T. Railroad Transportation.

Philips, U. B. A History of Transportation in the Eastern Cotton Belt to 1860. Published by Columbia University Press, 1908.

CHAPTER IV

THE MECHANISM OF THE RAILWAY—ITS TECHNICAL GROWTH

Although this book is concerned with the transportation service, with transportation economics, rather than with the technical or engineering phases of the subject, a brief account of the growth and present efficiency of the mechanism by which the service is now performed will aid in the presentation of the subjects considered in this volume. The railway machine consists of three parts: the track, the locomotive, and the car. Each had crude



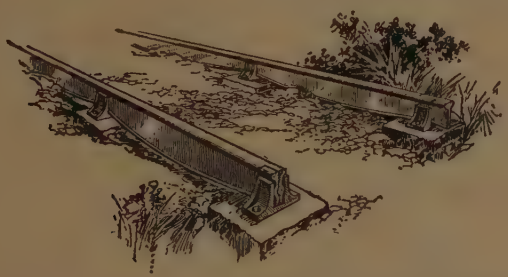
Track with Wooden Stringers, surfaced with Straps of Iron.

beginnings and has reached the present condition of excellence by a long series of improvements. A few only of the most important of these improvements need be referred to in this chapter.

At the beginning of railroad construction, tracks of various designs were built, the chief thought of the builders being to secure a solid structure that would not permit the rails to spread. In relation to the weight of the

Track of Granite Sills plated with Straps of Iron.

rolling-stock and volume of traffic the track was relatively heavy and expensive. This was particularly true in England and on some American railroads begun before 1835,



Track of Cast-Iron Rails resting on Granite Blocks.

up to which time American practise was more influenced by British methods than it was subsequently.

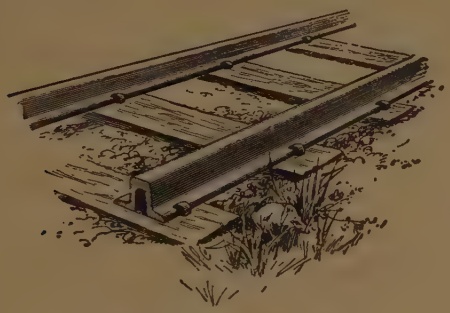
Three kinds of rails were used, the one most employed consisting of strong wooden beams, surfaced with strap

iron. The first iron rails used were cast, and, because they were cast iron, their length did not exceed 3½ feet. Rolled rails were soon substituted for cast-iron ones, and the length was increased to 15 feet. The weight per yard of these rolled rails sometimes exceeded 40 pounds. Until 1844 the rolled-iron rails used in the United States were all imported from England.

The road-bed of the Columbia Railroad from Philadelphia to the Susquehanna River, constructed by the State of Pennsylvania between 1828 and 1834, illustrates in an excellent way the various types of construction followed in the early days of railroad building. This was a double-track road 81.6 miles in length, the entire length of single track being 163.2 miles. For 6 miles of this distance the rails consisted of granite sills plated with flat iron bars. Sixteen miles of track had rails consisting of wooden string-pieces plated with thin bars of iron. These wooden string-pieces were laid upon wooden cross-ties, placed 4 feet apart upon a secure foundation of broken stone. On 2 miles of the track rails made of iron were supported upon stone blocks, the precaution being taken against spreading of the rails by placing stone sills across the track at intervals of 15 feet. The remainder of the track was constructed with iron rails resting upon stone blocks, wooden cross-sills being used at intervals of 15 feet. Throughout the entire length of this road there was a horse-path between the rails.

The roads constructed in this manner were needlessly expensive, and because of their rigidity were more destructive to rolling-stock than the railroad-tracks are at the present time. American builders soon adopted the kind of track with which we are now familiar, the rails being placed upon wooden cross-ties, resting either directly upon an earth foundation or upon a thin ballast of gravel or broken rock.

Builders tended early to substitute iron for wooden rails, but as late as 1850 there were several railroads in the United States, particularly in the Southern States, still having wooden rails surfaced with thin plates of iron. The earlier iron rails rolled were in the shape of an inverted U. The T-rail now universally employed was not much used during the first twenty years of rail-



ROLLED-IRON U-RAIL, 1844.

road construction. The use of steel instead of iron was not common until after 1870, when the cost of rolled steel had become low enough to permit of its use in the manufacture of rails.

The weight of the rail used has been steadily increased until at the present time the new rails being laid weigh from 85 to 110 pounds to the yard. One hundred pounds to the yard has become the standard upon most tracks where traffic is heaviest. For some time past the standard length of rail has been 30 feet, but at the present time some track is being laid with rails 60 feet in length. A rail 60 feet in length weighing 100 pounds to the yard weighs exactly one ton. The use of these heavy rails has been made necessary by the increased weight of engines and cars and by the increase in speed of passenger-trains and freight traffic. Along with the

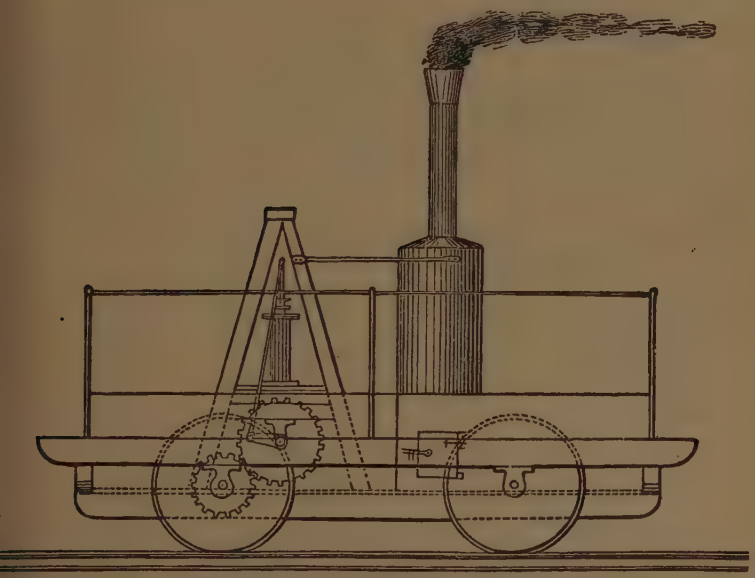
improvements in the track, the bridges and other structures have been strengthened to meet the necessities of modern transportation methods, so that in spite of the greater cheapness of material as compared with the early days of railway building, the road-bed of to-day is much more expensive than was that of fifty years ago. With few exceptions, the early roads had but a single track, and, indeed, to-day those having a relatively small volume of traffic have only one track. As the business over a line increases a second track usually becomes necessary, and some roads find difficulty in handling their business even with four-track lines.

The amount of traffic that can be handled over a railroad has been greatly increased by the use of the telegraph for despatching trains, by the adoption of electric and other signals, and by the possibility of running both passenger and freight trains at higher speeds as the result not only of having more powerful locomotives, but also of having power-brakes which are operated from the engines and keep the train under easy control. Even the necessity for stopping to take on water for the engine has been obviated by placing between the rails long, shallow troughs from which the tank of the "tender" can be filled while the train is in rapid motion. The efforts to economize in time and cost of service have been directed quite as much to the improvement of the track and road-bed as to the development of the other parts of the mechanism by which transportation is accomplished.

The Baltimore and Ohio was the pioneer railroad, but the Charleston and Hamburg road in South Carolina was the first one constructed solely with reference to the immediate use of steam traction. Horses preceded locomotives on the Baltimore and Ohio, the Philadelphia and Columbia, the Mohawk and Hudson, and other early

lines. The first locomotive actually run upon an American railroad was the Stourbridge Lion, imported from England in 1829 to be used near Honesdale, Pa., but the engine proved too heavy for the trestles, and was not put into service.

Locomotive building in the United States began in 1830. Indeed, experiments were begun the previous

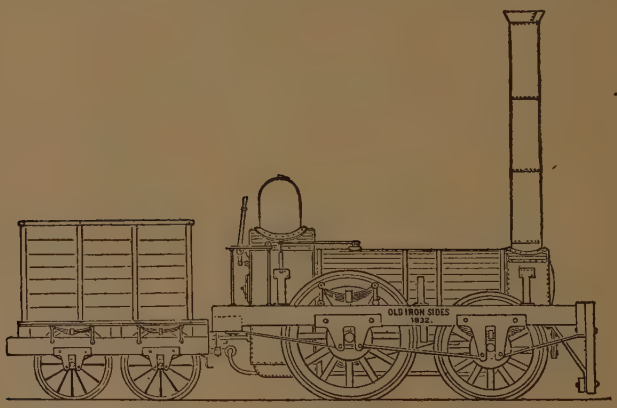


PETER COOPER'S LOCOMOTIVE, 1830.

year by Peter Cooper and others. Peter Cooper expected financial gains from the successful completion of the Baltimore and Ohio, and when it seemed uncertain whether locomotives could be run on a road having grades and sharp curves, Cooper designed a little engine called the Tom Thumb, which weighed barely a ton, but which succeeded, in August, 1830, in hauling $4\frac{1}{2}$ tons around curves and up grades at a speed of 12 to 15 miles an

hour, and did much toward demonstrating the possibility of using steam-locomotives on American railroads.

The first locomotives constructed in the United States for actual service on a railroad were built in New York city at the West Point Foundry Works. Locomotive No. 1 was the Best Friend, erected in 1830, and put into service that year on the Charleston and Hamburg Railroad. The following year the West Point was delivered to the same company. The third locomotive to come from the West Point Foundry Works was the De Witt Clinton, also built in 1831, and put into use on the Mohawk and Hudson Railroad between Albany and Schenectady. Machinists in New York, Baltimore, York, Pa., and elsewhere were studying and experimenting, so



The Old Ironsides, 1832.

that within two years from the time when the first tracks were laid American builders had demonstrated their ability to construct locomotives adapted to the requirements imposed by American conditions. Among the firms which early undertook locomotive construction was the one founded in Philadelphia by Matthias Baldwin, whose first

engine, the Old Ironsides, appeared in 1832. Up to June 1, 1908, the Baldwin Locomotive Works constructed 32,803 locomotives, and is now building 2,600 to 2,700 each year.

The influence of George Stephenson, of England, and of his celebrated locomotive the Rocket, was felt in the United States, but considering the undeveloped con-

De Witt Clinton Engine and Train, 1831.

dition of American industries in 1830, a surprisingly small number of English engines were imported. The needs of our railroads were mainly supplied by our own foundries and shops. Nor were British models followed to much extent. American designers followed new lines in order to meet novel conditions. They were so successful in making engines that would work on curves and climb grades that American locomotives soon began to be sold in England.

As compared with the locomotives with which we are now familiar, those built in 1830 seem tiny and curiously designed. The first locomotives constructed for actual service weighed from 3 to 5 tons; the weight of the De Witt Clinton was 3½ tons. The English engines imported were double that weight and proved too heavy for the tracks with rails of wood surfaced with strap iron. The John Bull engine, shown in the illustration, was imported in 1831 for use on the Camden and Amboy line, the line connecting New York and Philadelphia. It weighed 10 tons, and was the heaviest en-

gine run up to that time. Indeed, its great size was a positive disadvantage to the company for some time.

The American locomotives and cars, unlike the English and those on the Continent, where English models were generally followed, early adopted a swivel truck.

John Bull Engine and Train, 1831.

After the first few years practically all American locomotives had eight wheels, four driving-wheels under the rear part of the engine and a four-wheeled truck carrying the fore part of the boiler, the truck being fastened to the engine by means of a bolt which permitted the truck to swing or swivel through several degrees and enabled the engine to round sharp curves. The swiveling truck seems to have been thought of by several people about the same time. Ross Winans, of Baltimore, used it under a passenger-coach in 1831. The same year he placed a

Lancaster Engine and Train, run on Pennsylvania State Railroad, 1834.

truck under the forward part of a locomotive. In 1831, moreover, the truck principle was applied to two locomotives built in New York. One was designed by Horatio Allen, while chief engineer of the Charleston and Hamburg Railroad, and the other by John B. Jervis, chief

engineer for the Mohawk and Hudson Railroad. The engine planned by Jervis was more in accordance with subsequent designs, and to him the greater credit is due.

The American or Campbell type is the name applied to the locomotive having four connected driving-wheels and a four-wheel truck. The first engine of this design was built in 1836 by James Brooks for Henry R. Campbell, both of Philadelphia. This speedily became the prevailing design for the passenger service, and has

First Campbell Locomotive, 1836.

remained until the present day the approved form of passenger locomotive, except when special conditions require the use of a locomotive of a different type.

One essential feature of the locomotive awaited introduction until 1837, and that was the use of equalizing-beams by means of which the weight on the driving-wheels ceases to be affected by the inequalities of the elevation in the track. Since 1837 locomotives have been so constructed that each driving-wheel can have a vertical motion independent of the other wheels, and can so move

without changing very greatly the pressure imposed by the wheel on the track. Equalizing-beams were first used in the Hercules, designed by Joseph Harrison, Jr., and constructed by the Baldwin Locomotive Works.

The differentiation in designs for freight and passenger locomotives began to be evident after 1840. The Campbell engine was the model generally followed for the passenger service, but for handling freight traffic heavier and more powerful locomotives, having six, eight, or ten driving-wheels, and all connected, were found necessary. There are now three general classes of heavy engines: the mogul, with six connected drivers; the consolidation, with eight drivers; and the decapod, hav-

Prairie Type of Mogul Compound Freight-Engine, Baldwin Locomotive Works.

ing ten coupled driving-wheels. Ross Winans, of Baltimore, in 1844 constructed a locomotive with eight connected wheels, and four years later brought out the first "camel" type of engine, so named because the engine-driver's cab is placed above the middle part of the boiler. The construction of mogul and consolidation locomotives became frequent about thirty years ago.

During the past fifty years a great many important improvements have been made in locomotives. Among the most valuable innovations was the introduction of compound locomotives, by means of which the steam, in passing from the boiler to the exhaust, is used in two

cylinders in succession. By that means a greater amount of power is derived from a given quantity of fuel.

The locomotive in use to-day weighs as much as twenty-five of the engines used at the beginning of rail-

BALDWIN'S TANDEM COMPOUND SANTA FÉ TYPE LOCOMOTIVE.
Weight, engine and tender, about 450,000 pounds; tractive force 64,730 pounds.

roading. A locomotive weighing 200,000 pounds is now not considered notably heavy, and some with their tender weigh 500,000 pounds. In 1850 a locomotive weighing more than 50,000 pounds was considered large. Fifty years since, a train-load of 200 tons would have

BALDWIN'S MALLET COMPOUND ARTICULATED LOCOMOTIVE.
Weight, engine and tender, about 503,000 pounds; tractive force 71,700 pounds.

been a heavy one to handle, but now 2,500 to 3,000 tons are hauled over long distances by the largest types of freight-engines. The achievements in the increase of speed of locomotives have been less wonderful,

but the schedule speed of 60 to 65 miles an hour for passenger-trains, now regularly maintained on many American and European roads, is double the maximum rate

A High-Speed Compound Passenger-Engine, Baldwin Locomotive Works.

possible forty years ago, and the discomforts and risks of the present are incomparably less than those formerly incident to travel.

The improvements in travel and traffic have resulted quite as much from the progressive adaptation of the vehicle to the service to be performed as from betterments in the road-bed and the locomotive. The passenger-coaches first used were similar to the stage-coaches, and this was so because carriage-builders in making vehicles for the railroad followed the designs with which they were familiar. Indeed, in Europe the passenger-coaches in use to-day, with their small compartments entered from the side, indicate that the stage-coach influenced the style of construction. Coaches of the European type were used on a few of the early American roads.

The construction of coaches for American railroads, differing totally in design from those used on highways, began with the opening of the first lines. The first railroad-coaches were not unlike the four-wheeled caboose of to-day in appearance, but after 1830 longer vehicles mounted on two four-wheeled trucks began to be used, and the typical American coach soon came to differ from

the European in being longer, in having the doors at the ends, and in having a central aisle. This form of coach was probably adopted because the curves in our tracks required the use of trucks under the cars as well as under the engines.

PASSENGER-COACH, 1835. USED ON THE PORTAGE RAILROAD OVER THE ALLEGHANY MOUNTAINS, PENNSYLVANIA.

Many improvements in design were necessary to produce the comfortable coaches of to-day. Better ventilation was secured by raising the central half of the roof and inserting "deck-lights." This was first done in 1836, but it was several years before the raised roof became a feature of all passenger-cars. The ventilation thus afforded was by no means perfect, and the problem of maintaining pure air in crowded cars has not yet been fully solved. For thirty years the jolting caused by the loose coupling of cars was a great discomfort to travelers, but patent automatic couplers, of which there are many kinds in use, have now obviated that trouble.

AN EARLY PASSENGER-COACH.

The sleeping-car, as we know it to-day, originated with George M. Pullman, who built the Pioneer A in 1864. Cars had been fitted up with tiers of bunks on each side as early as 1837, but the discomforts of such accommodations were so great that sleeping-cars did not become popular until the Pullman and Wagner services

became available. The sleeping-car was soon followed by the buffet- or hotel-car, and that by drawing-room- and dining-cars. The necessity for passing from one car to another suggested the vestibuling of trains. The idea is as old as 1852, when a man by the name of Waterbury designed a vestibuled car. Some cars were fitted up with vestibules that year, but the first vestibuled train like those with which we are familiar was designed and built by Pullman and was run on the Pennsylvania Railroad in 1886.

The air-brake, first successfully applied to passenger-trains in 1868, was one of the most valuable of all the inventions by which the improvement of the transportation service has been brought about. In 1887 the air-brake had been developed so that it was practicable to use it on freight-trains, and at the present time the law requires all trains in the United States to be equipped with air-brakes by which the train can be controlled by the engineer. The days of the hand-brake are past. The power-brake has greatly lessened the risks to which employees are exposed, has decreased the danger of travel, and has made possible much greater speed for freight- as well as passenger-trains.

Many appliances contribute to the comfort and safety of the passenger. The railroad companies are striving to enable the traveler to command the conveniences of living and the facilities for transacting business that he would have at home or at a hotel. That ideal has hardly been reached; but, with the aid of electricity, much progress has been made toward its realization. We have, however, not reached the limits of improvements in comfort or in speed of travel. Indeed, we have in all probability hardly begun to appropriate the possibilities of electricity.

The freight-car is to-day built in many designs for

the better accommodation of the numerous kinds of traffic to be handled. Starting with only open and box cars, crudely constructed, mounted on four wheels and having a loading capacity of 3 to 5 tons, the freight equipment of railroads has come to include the large variety of cars with which we are now familiar, provided with many mechanical appliances for saving labor costs and minimizing damages to property in transit, and capable of carrying loads of over 50 tons. Many of the improvements in car construction, as, for instance, the swiveling truck having four or more wheels, improved couplings, and air-brakes, were as applicable to the freight-car as to the passenger-coach.

Specialization in freight-cars continues with the growing volume of traffic. There are special cars for carrying cattle, dressed meats, oil, coal, coke, iron ore, fruit, milk, and many other commodities, a special car being brought into use whenever there develops a new kind of traffic running regularly and in large volume and not capable of being handled advantageously in the ordinary box or flat cars. The invention of the refrigerator- and heater-cars was incidental to this specialization, and has been of great value to producer and consumer. The distribution of perishable commodities throughout the entire country can be carried on during all seasons of the year, to the great advantage both of the producer and consumer. The products of the tropical and the cold sections of the world are now available for the people of both regions at all times, and the volume and value of freight transported are greater than they could be when the movement of many kinds of goods was dependent upon the weather.

The increase in the capacity of the freight-car, particularly in the United States, has been quite as remarkable as the growth in the size of locomotives. With the

construction of stronger tracks and with the use of steel rails the railroad companies have taken advantage of the economy resulting from the use of large cars. The larger the cars the less the "tare" or weight of the vehicles as compared with the weight of the cargo. The larger the cars the greater the live load the engine can haul. Twenty-five years ago 20 tons was the standard car-load in this country, and such a weight would to-day be considered a heavy one in most countries of Europe; but for some time past the standard box and open car in the United States has been one built to carry 30 tons. Many cars now used in carrying coal, ore, and other heavy commodities in this country are loaded with 50 to 55 tons of cargo, and it seems probable that eventually the 50-ton car will become the standard for handling many special kinds of freight.

The construction of cars with a capacity of 50 tons or more has been facilitated by the large use of steel, both in the truck-frames and in the body of the car. Indeed, a large share of the cars now being built for heavy traffic are constructed entirely of steel. Just as the small wooden sailing vessel is giving way to the large steel steamship, so is the wooden freight-car being displaced by steel cars of greater strength and capacity.

The facilities for handling freight at stations or terminals constitute an important part of the mechanism by which the transportation service is performed; indeed, the economies in time which have been made possible by the improvements in road-bed, locomotives, and cars would be largely destroyed if freight were still loaded and unloaded by the primitive methods of hand labor that used to prevail. At terminals where large quantities of mixed cargoes are handled, huge warehouses equipped with cranes and elevators are provided. Grain is loaded and unloaded by machinery. Cars are filled with coal, coke,

and ore from "pockets" or chutes, which discharge their contents into the cars by the force of gravity, and mineral cars are constructed with sides or bottoms that can be dropped so as to discharge the cargo without its being handled.

The facilities for handling iron ore and coal represent the most complete use to which machinery has been put for loading and unloading heavy freight quickly and cheaply. Electrically operated hoists, traveling-cranes, and car dumps accomplish in hours what formerly took days to perform, and at a fraction of the previous cost. Buckets holding from one to five tons of ore are filled automatically, carried several hundred feet, and dumped in a few seconds; and loaded cars are picked up bodily and their contents of coal or ore emptied into the hold of a vessel or upon the storage dump. A trip to one of the ore ports on the Great Lakes or to one of the large seaboard terminals will give the visitor one of the best possible illustrations obtainable of the marvelous adaptation of machinery to the heavy work of the world.

REFERENCES FOR FURTHER READING

TANNER, H. S. A Description of the Canals and Railroads of the United States. 1840.

PANGBORN, J. G. The World's Railway. 1894.

BROWN, WILLIAM H. The History of the First Locomotives in America, from Original Documents and the Testimony of Living Witnesses. 1871. [A book rich in historical material.]

PROUT, H. G. Vol. ii of The United States (edited by N. S. Shaler), pp. 163–178, a paper on Railroad Construction and Equipment.

The American Railway, its Construction, Development, Management, and Appliances. 1892. [A collection of papers by different authors. M. N. Forney has a valuable paper on American Locomotives and Cars. Pp. 100–148.]

History of the Baldwin Locomotive Works, Philadelphia, 1831–1907.

CHAPTER V

THE PRESENT RAILWAY SYSTEM OF THE UNITED STATES

At the close of the year 1907 there were 230,000 miles of railroad lines in the United States. Several of these lines have more than one track, and if the total length of track in the various roads and in their freight-yards be taken as the basis of length, there are found to be about 330,000 miles of railroad-track in this country. This vast mileage is owned by about 2,440 corporations. Many of these corporations, it is true, are subsidiary to others, but according to the reports of the Interstate Commerce Commission, there are over 1,000 operating companies at the present time.

The railroad system of the United States as a whole is too vast and is composed of too many parts to be readily comprehended. It is impossible for the ordinary mind at least to carry the details of such a large and intricate picture as is presented by a railway net comprising 230,000 miles of line and spread over a country 3,000 miles in breadth. By dividing the United States into several natural territorial sections, and by classifying the railroad lines or systems according to those sections, and by grouping the railroads according to ownership, it is possible to get at least a general picture of what for convenience' sake we term the American railway system.

The most general and most frequent grouping of the railroads of the United States territorially is into three sections; one section being that north of the Ohio and

VANDERBILT GROUP

EMBRACING

- NEW YORK CENTRAL & HUDSON RIVER R. R.
- LAKE SHORE & MICHIGAN SOUTHERN RY
- NEW YORK, CHICAGO & ST LOUIS R. R
- MICHIGAN CENTRAL R. R.
- DELAWARE & HUDSON R. R
- CLEVELAND, CINCINNATI, CHICAGO & ST LOUIS RY
- CHICAGO & NORTHWESTERN RY
- CHICAGO, ST PAUL, MINNEAPOLIS & OMAHA RY
- FREMONT, ELKHORN & MISSOURI VALLEY R. R
- DELAWARE LACKAWANA & WESTERN RAILROAD
- LAKE ERIE & WESTERN RAILROAD
- PITTSBURGH & LAKE ERIE RAILROAD
- INDIANA, ILLINOIS & IOWA RAILROAD

James Rivers and east of the Mississippi, another the region south of the Ohio and James and east of the Mississippi, and the third the country west of the Mississippi. A basis for this grouping may be found in well-known differences in production, density of population, and other economic and social conditions prevailing in these three sections of our country. There are also sufficient differences in the freight business of the railroads in these sections to cause distinct classifications of freight to have been worked out for each of the three regions. While this grouping of the railroads of the United States into three sections has been serviceable for purposes of freight classification, the sections are so large that further subdivision is necessary. Within each of these large groups there are distinct subdivisions, due in part to diversity of physical conditions, and in part to the fact that the railroads in different portions of the country have come, in a large degree, to be owned by a limited number of groups of capitalists.

The railway system of the United States as a whole may be divided into seven groups, each group occupying a nearly although not completely distinct section of the country. Within some of these sections the railroad system may be subdivided into two or more parts, dependent upon whether a general or detailed classification is sought for. The first of these territorial groups of railroads comprises the New England States. The railroads in this section differ from those of other parts of the country, because they serve the region where population is densest; where the passenger business as compared with the freight is larger than in any of the other States, and where the local freight business as contrasted with the through freight is of relatively greater importance. Boston is the great port of the New England States, and the roads north of Boston are quite distinct from those south

PENNSYLVANIA GROUP

EMBRACING

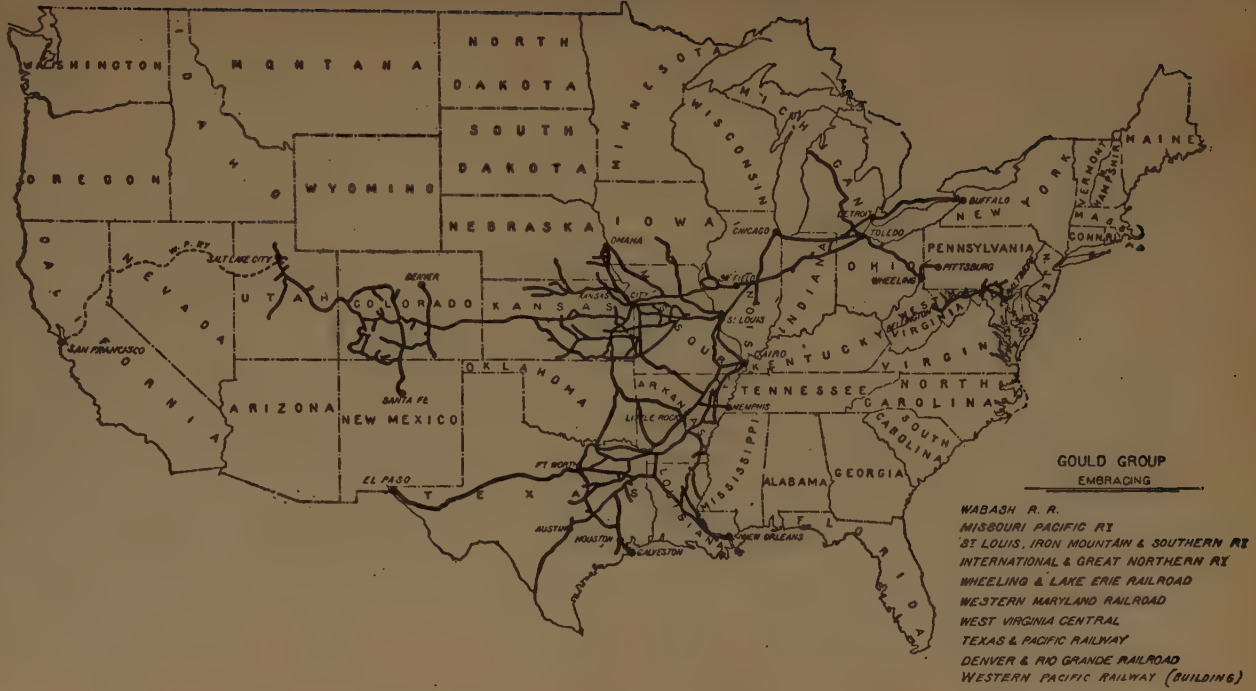
PENNSYLVANIA R. R.
PITTSBURG, FORT WAYNE & CHICAGO R. R.
PITTSBURG, CINCINNATI, CHICAGO & ST. LOUIS R. R.
BALTIMORE & OHIO R. R.
PHILADELPHIA & READING R. R.
CHESAPEAKE & OHIO R. R.
NORFOLK & WESTERN R. R.
LONG ISLAND R. R.

of that city. The interchange of traffic between the two sections is comparatively small, and the railroad lines in the two sections are under the control of different managements.

The region west of New England and the middle Atlantic seaboard, north of the Ohio and James Rivers, and east of the cities of Chicago and St. Louis comprises another section of the country within which there is considerable unity in the operation and ownership of the railroad systems. The railroads in this group have the heaviest freight traffic of any roads in the country. Most of them were built from the East toward the West, for the purpose of bringing the agricultural, forest, and mineral products of the great central West to the Atlantic seaboard to supply our own and European markets, and for the purpose of giving the manufacturing industries of the northeastern section of the United States a western outlet for the products of the mills and factories. The railroads in this group are often spoken of as the "trunk lines," because the first through or trunk lines in the United States were those built to connect the Atlantic seaboard with the Great Lakes and the Ohio River. The corporations controlling these first trunk lines have extended their systems to Chicago and St. Louis, and the term "trunk lines" has come to be applied to the roads between the Atlantic seaboard and the central West.

Comprised within this trunk-line territory is a distinct subdivision of lines whose business consists chiefly of transporting anthracite coal from the Pennsylvania mines to the seaboard. Some of the hard coal mined in Pennsylvania is handled by the trunk lines, but the larger part of this coal is mined and transported by other than the trunk-line companies.

The section south of the James and Ohio and east of the Mississippi is usually spoken of as Southern territory.

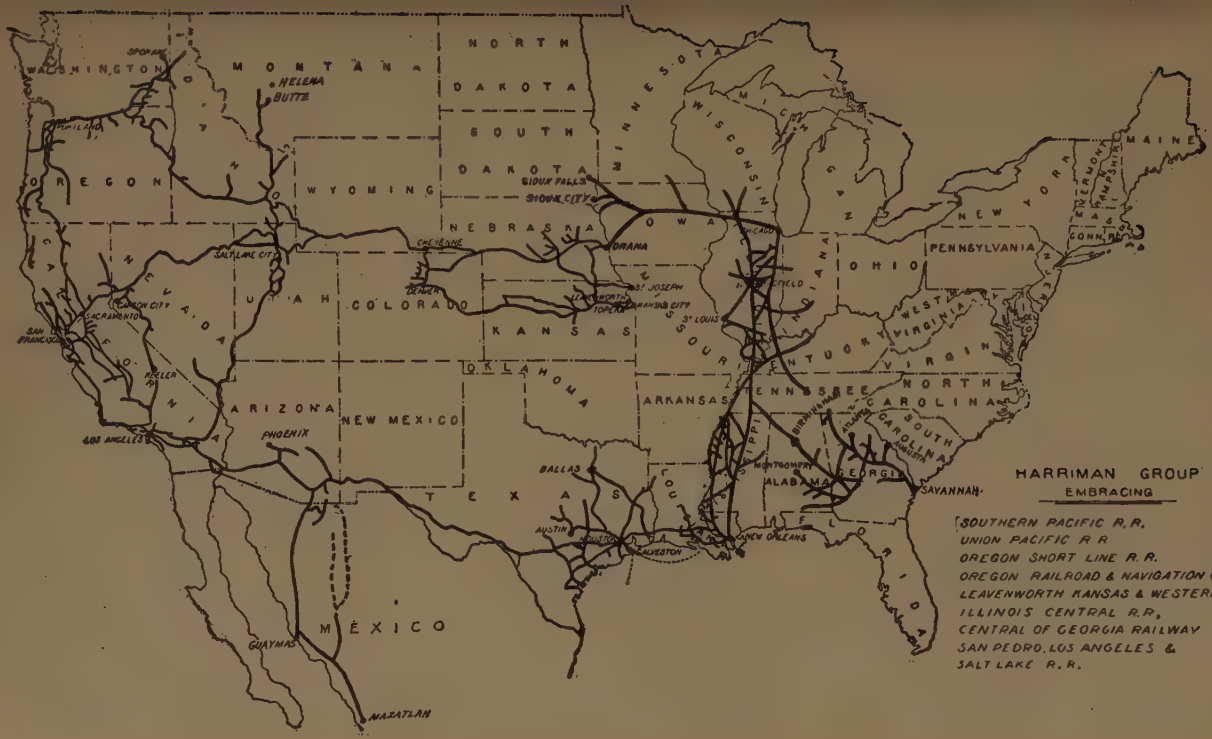

WASHINGTON
MONTANA
NORTH DAKOTA
SOUTH DAKOTA
MINNESOTA
WISCONSIN
MICHIGAN
OREGON
WYOMING
NEBRASKA
IOWA
CHICAGO
DETROIT
TOLEDO
BUFFALO
NEW YORK
MAINE
VERMONT
NEW HAMPSHIRE
MASS.
CONN.
PENNSYLVANIA
PITTSBURG
OHIO
WHEELING
INDIANA
ILLINOIS
OMAHA
KANSAS CITY
ST. LOUIS
CAIRO
SALT LAKE CITY
DENVER
NEVADA
UTAH
COLORADO
KANSAS
SAN FRANCISCO
ARIZONA
NEW MEXICO
SANTA FE
OKLAHOMA
ARKANSAS
MEMPHIS
LITTLE ROCK
KENTUCKY
VIRGINIA
TENNESSEE
NORTH CAROLINA
SOUTH CAROLINA
MISSISSIPPI
ALABAMA
GEORGIA
FT. WORTH
EL PASO
TEXAS
AUSTIN
HOUSTON
GALVESTON
NEW ORLEANS
LOUISIANA
FLORIDA
GOULD GROUP
EMBRACING
WABASH R. R.
MISSOURI PACIFIC RY
ST LOUIS, IRON MOUNTAIN & SOUTHERN RY
INTERNATIONAL & GREAT NORTHERN RY
WHEELING & LAKE ERIE RAILROAD
WESTERN MARYLAND RAILROAD
WEST VIRGINIA CENTRAL
TEXAS & PACIFIC RAILWAY
DENVER & RIO GRANDE RAILROAD
WESTERN PACIFIC RAILWAY (BUILDING)

The traffic conditions in Southern territory differ from those in other parts of the country, and it is probable that the railroads in this part of the United States will always remain a fairly distinct group. The Alleghany Mountains separate the Southern territory into two parts, one of which is tributary to the Gulf and the other to the Atlantic seaboard. To some extent the lines in these two parts are operated under separate managements, but there is manifest a marked tendency toward the unification of ownership and control of the lines in both parts of the Southern territory.

To the west and north of Chicago and St. Louis, and including the chief grain-raising States of the United States, may be found another group of railroads. The roads in this territory are called the "granger" lines, a term that originated thirty years ago at the time when the farmers of the central West were organizing their so-called "granges," or societies. The granger roads radiate from three centers, the chief of which is Chicago. At the head of Lake Superior is another growing center of traffic, while St. Louis has always been an important point for the collection and distribution of the traffic from and to the agricultural central West.

South and west of St. Louis lies the Southwestern territory, within which there is a large number of railway lines, some of them having St. Louis and Memphis connections, and others being more distinctly tributary to Gulf ports. A large part of the roads in this system were formerly controlled by Jay Gould; now they are managed by a group of capitalists headed by George J. Gould, and these lines are often spoken of as the Gould roads.

West of the sections occupied by the granger and Southwestern lines lies the territory occupied by the transcontinental or Pacific roads. These transcontinental lines

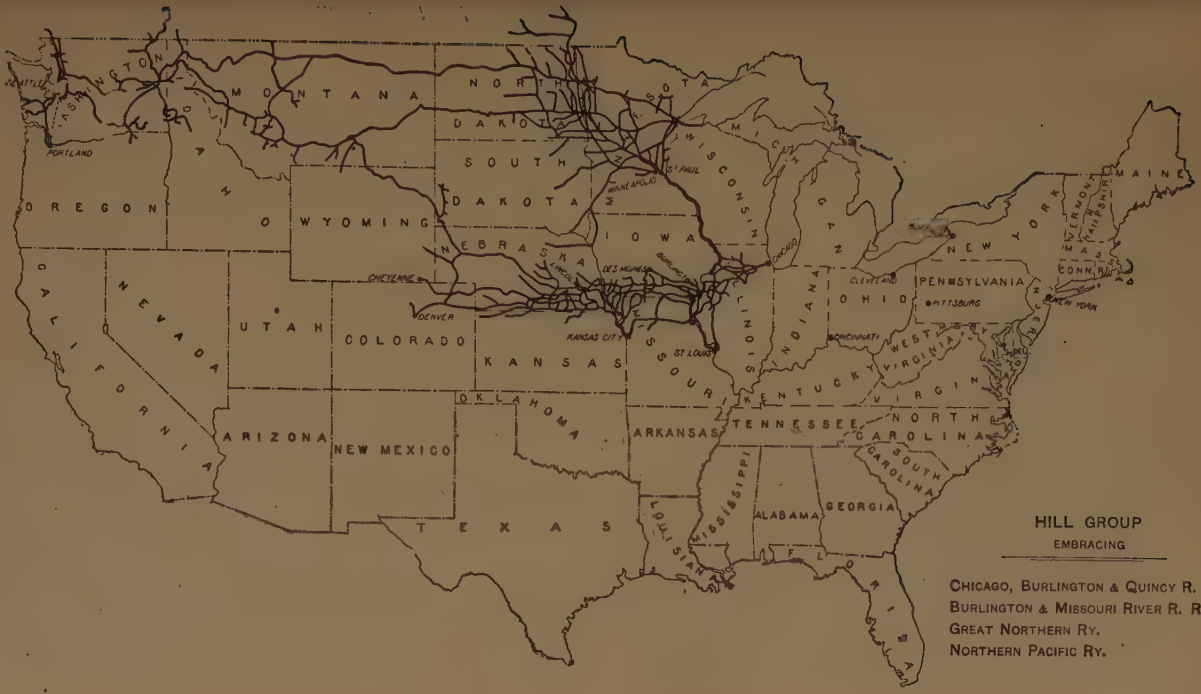


HARRIMAN GROUP
EMBRACING

SOUTHERN PACIFIC R.R.
UNION PACIFIC R.R.
OREGON SHORT LINE R.R.
OREGON RAILROAD & NAVIGATION Co.
LEAVENWORTH KANSAS & WESTERN R.R.
ILLINOIS CENTRAL R.R.
CENTRAL OF GEORGIA RAILWAY
SAN PEDRO, LOS ANGELES & SALT LAKE R.R.

have connections with Chicago and the Mississippi, and consequently the territory occupied by the transcontinental lines overlaps to some extent the granger and Southwestern sections. The transcontinental lines are divided into two rather distinct groups, the Northern and Southern. Within the Northern section are comprised the Great Northern, the Northern Pacific, the Chicago, Burlington and Quincy. The Southern section includes the Union, Central, and Southern Pacific roads, all under one management, and the Atchison, Topeka and Santa Fé, which up to the present time has remained an independent line.

The grouping of the railroads just given into seven sections is based upon physical differences prevailing in different parts of the country, and it is not probable that those differences will very largely change with the growth of the country. We may then expect such a classification to be fairly permanent. The objection to the classification, however, is that it gives very little information regarding the ownership and management of the American railroads. A classification based upon ownership and management is much more instructive, and may be made without especial difficulty. This classification, however, is subject to constant change by transfers of ownership from one set of capitalists to another. The student will need to revise the classification year by year, but the tendencies in railway consolidation are such that the amount of revision necessary can hardly be very great. The classification submitted in the following table shows that the largest share of the great railroad mileage in this country is already in the hands of a limited number of large interests. Between these groups of capitalists there is developing a community of interest or harmony of action that is rapidly restraining the competition in rate-making that formerly prevailed among separately managed railway systems. The table on pages 62 and 63 groups the leading



HILL GROUP

EMBRACING

CHICAGO, BURLINGTON & QUINCY R. R
BURLINGTON & MISSOURI RIVER R. R.
GREAT NORTHERN RY.
NORTHERN PACIFIC RY.

Grouping of American Railroads by Ownership and Territory, 1906

Systems and Roads.	Mileage.	Territory.
1. The Boston and Maine, and	2,349	New England.
2. New York, New Haven and Hartford	2,056	
3. The Vanderbilt roads:		
Boston and Albany	392	Trunk line.
New York Central and Hudson River	3,120	
Delaware, Lackawanna and Western	957	
Lake Shore and Michigan Southern	1,520	
Michigan Central	1,745	
New York, Chicago and St. Louis	523	
Cleveland, Cincinnati, Chicago and St. Louis	2,329	
Lake Erie and Western	880	
Pittsburg and Lake Erie	191	
Chicago, Indiana and Southern	328	
Other affiliated Eastern roads	1,264	
Chicago and Northwestern	9,329	Granger.
Total	22,578	
4. The Pennsylvania Interests:		
Pennsylvania Railroad (east of Pittsburg)	5,941	Trunk line.
Pennsylvania Company (west of Pittsburg)	4,868	
Grand Rapids and Indiana	579	
Terra Haute and Indianapolis (Vandalia)	828	
Baltimore and Ohio (Allied to Penna. R.R.)	4,454	
Norfolk and Western (Allied to Penna.R.R)	1,874	
Chesapeake and Ohio (Allied to Penna.R.R)	1,826	
Total	20,370	
5. The Philadelphia and Reading System (owned by the Vanderbilt-Pennsylvania interests)	2,125	Southern.
6. Morgan roads:		
Lehigh Valley	1,450	
Erie Railroad	2,315	
Père Marquette	2,403	
Cincinnati, Hamilton and Dayton	1,038	
Southern Railway	7,430	
Cincinnati, New Orleans and Texas Pacific	335	
Mobile and Ohio	926	
Central of Georgia	1,913	
Total	17,810	
7. Morgan and Atlantic Coast Line roads:		
Atlantic Coast Line	4,361	
Louisville and Nashville System	6,841	
Total	11,202	
8. Seaboard Air Line	2,610	

Systems and Roads.	Mileage.	Territory.
9. Gould roads:		
Wabash	2,517	Trunk line.
Wheeling and Lake Erie	498	
Western Maryland	544	
Missouri Pacific	3,880	Southwestern.
St. Louis, Iron Mountain and Southern	2,459	
St. Louis Southwestern	1,454	
Texas and Pacific	1,847	
International and Great Northern	1,159	
Denver and Rio Grande (Southern Transcontinental territory)	2,544	
Western Pacific (in construction)	....	
Total	16,902	
10. Moore roads:		
Rock Island Company	13,743	Southwestern and Northwestern.
Chicago and Alton	970	
Total	14,713	
11. Chicago, Milwaukee and St. Paul	7,267	Northwestern or "Granger."
12. Chicago Great Western	1,512	
13. Hawley roads:		
Minneapolis and St. Louis	799	
Iowa Central	558	
Toledo, St. Louis and Western	450	Trunk line.
Colorado and Southern	1,663	Southern transcontinental.
Total	3,470	
14. Wisconsin Central ("Granger" territory)	1,042	
15. Atchison, Topeka and Santa Fé	9,614	
16. Harriman roads:		
Union Pacific	2,962	
Southern Pacific	9,216	
Oregon Short Line	1,401	Northern transcontinental.
Oregon Railway and Navigation Company	1,144	
Illinois Central (Southern territory)	4,459	
Total	19,182	
17. Hill roads:		
Great Northern	6,654	Northwest'n.
Northern Pacific	5,826	
Chicago, Burlington and Quincy	8,823	
Total	21,303	
Grand total of 17 systems listed above	176,105	

railroad systems in the United States by ownership and by territorial sections. The mileage of each system at the close of 1906 is given. Such a table as this has much value, because it shows clearly to what extent railway combination had progressed up to the close of 1906. The reader will understand that the mileage of nearly every railroad company changes more or less each year, and that there are more or less frequent changes in the ownership of roads; and that consequently the table is not strictly accurate for 1907, and will be less so each succeeding year.

The above grouping of the railroads of the United States does not show with entire satisfaction the relations of some of the railroad systems to each other. The Erie is rightly classified as a Morgan road, although it has never been operated in connection with any other of the Morgan lines. The Central of New Jersey is leased to the Philadelphia and Reading, which is now controlled jointly by the Lake Shore and Michigan Southern and the Baltimore and Ohio. That Mr. J. P. Morgan's relations with the Vanderbilt interests are harmonious is suggested by his having a place on the directorate of the New York Central. The Atlantic Coast line includes the former Plant System, and has a controlling interest in the Louisville and Nashville. The Louisville and Nashville, together with the Southern Railway, which is a Morgan road, owns a large part of the Chicago, Indianapolis and Louisville (Monon). The Georgia Railroad is owned jointly by the Louisville and Nashville and the Atlantic Coast Line. The Rockefeller or Standard Oil interests are large investors in the Gould, the St. Paul, and other lines.

The roads listed in the foregoing table comprise over three-fourths of the total mileage of the country, and they handle much more than three-fourths of the total traffic moved by rail. There are but 17 groups of owners mentioned in the table, and of those 17, 8—the Vanderbilt,

the Pennsylvania, the Morgan, the Atlantic Coast Line Company, the Gould, the Harriman, the Moore, and the Hill—groups own or control two-thirds of the railroad mileage in the United States. Each one of the groups represents a host of individual investors, but the control of the property of each group is centralized in the individual, or, at most, the few men, standing at the head of the "interest."

Some of these systems of roads have a greater mileage and a larger volume of traffic than the railroads in any of the European states with the exception of Great Britain, France, Germany, and Russia. Indeed, there is probably more freight handled over the group of roads controlled by the Pennsylvania interests than over the railroad system of any European country.

The table shows a rather marked parallelism between the territorial grouping and the consolidation of systems by ownership or "community of interests." It seems probable that it will not be many years before the railroads of the United States as a whole will be divided into a small number of systems, each serving a well-defined territory, and each owned by a distinct group of capitalists. Our experience promises to result in conditions similar to those which prevail in France and Great Britain. In France a large number of corporations were chartered in the beginning of railroad construction, but after a few years these companies consolidated into six large ones, among which the country was divided. In Great Britain much the same thing occurred, and a few large companies came to occupy each a fairly definite part of the country.

This consolidation and territorial grouping of railroads has been accomplished earlier in France and England than in the United States, because our country is much larger, and is less developed industrially. In New

England, where conditions as regards density of population and industrial advancement were somewhat like those of Europe, the process of railroad amalgamation was completed some years since. What has been finished in New England is being worked out in other parts of the United States, the progress toward consolidation having been especially rapid since 1898.

Although the United States includes a vast stretch of territory, the country is well supplied with railroad facilities. There are two ways by which the supply of railway facilities is most frequently measured. One of the methods is to ascertain the ratio between the railroad mileage and the number of square miles of territory in the country or in the section being considered—that is, to determine the number of miles of railroad per 100 square miles of territory. Another measure is found in the ratio of mileage to population, or in the number of miles of railroad per 10,000 inhabitants. The number of miles of railroad per 100 square miles is greater in the "trunk-line" territory—the section between New England and Chicago and St. Louis—than in any other part of the United States, the number being about 19; the New England district comes second, with 11.6 miles per 100 square miles of territory; and the granger territory third, with 11.73; after which comes the Southern district, then the Southwestern, and finally the Western sections served by the transcontinental lines. In the United States as a whole there are 7.55 miles of railroad for each 100 square miles of territory.

Of the individual States, New Jersey ranks first in the railway mileage per 100 square miles, having 30.5 miles for each section of that area; Massachusetts comes second, with a ratio of 26.3; Pennsylvania third, with a ratio of over 25; after which come Ohio, Illinois, Connecticut, Rhode Island, Indiana, and Iowa.

The ratio of railroad mileage to population is very different from the ratio between mileage and territory. The State of Nevada, with only 1,440 miles of road, has 306 miles per 10,000 inhabitants, while the State of Illinois, with over 12,000 miles of railroad—the greatest mileage of any of the States—has less than 23 miles per 10,000 people. Massachusetts, with next to the longest mileage per 100 square miles of territory, is so thickly populated that she has only 6.85 miles of railroad for each 10,000 residents. The people of Massachusetts, however, are especially well supplied with railroad facilities. The railroad net is thickly woven and there are no people more than a few miles distant from a well-equipped rail line.

The people living in the eastern half of the United States are more adequately supplied with railroad facilities than are the people of some of the European countries; taking Europe as a whole, there are but 5.1 miles of railroad for each 100 square miles of territory. In Belgium there are 39.6 miles for each such area, in Great Britain and Ireland the number of miles is 19, and in the German Empire 17 per 100 square miles. In European Russia, however, there are only 1.4 miles per 100 square miles, and in Sweden only 4.5 miles. Western Europe is better supplied territorially with railroads than the United States is, even in the Eastern part. Eastern and northern Europe, like the western third of the United States, has a relatively small supply of railroads.

Measured by the ratio of railway mileage to population, the supply of railroad facilities enjoyed by the people of the United States is greater than that possessed by Europeans. Taking Europe as a whole, there are only 4.8 miles of railroad for each 10,000 people, which is but a little more than one-sixth of the figure for the United States, where the ratio is 27. In Great Britain

and Ireland there are 5.5 miles of railroad per 10,000 inhabitants, in the German Empire 6.2 miles, in France 7.4 miles, and in Switzerland 8 miles. By comparing these ratios with those for the States of the United States it will be seen that the person living in this country is served by a considerably greater length of railroad.

REFERENCES FOR FURTHER READING

Newcomb, H. T. The Recent Great Railway Combinations. Review of Reviews, vol. xxiv, July, 1901.

Hull, C. H. Railway Alliance and Trade Districts. The International Monthly, vol. iii, June, 1901.

Report of Industrial Commission. Vol. xix, pp. 304–322.

Woodlock, T. F. The Railroad Gazette, vol. xxxiii, p. 671, September 27, 1901.

Statistics of Railways in the United States. Annual Report by the Interstate Commerce Commission.

Snyder, C. American Railways as Investments, 1907.

CHAPTER VI

THE RAILWAY CORPORATION AND ITS CHARTER

The agency by which the railroad machine is managed and the railway system just described is operated is the corporation. The product resulting from the operation of the machine is the transportation service. The executor of the service is the corporation.

Nothing has been more characteristic of the development of industry during the past fifty years than the substitution of the corporation for individual and partnership management of business and the development of the corporations thus substituted into great and powerful organizations. In no other line of activity has the corporation developed in a more typical manner than in the railroad business, and a brief study of the railroad corporation as it exists to-day will be remunerative not only to the student of railway affairs, but to the student of economic activity in general.

In his book on the Law of Personal Property, Theodore Dwight defined a corporation as "an artificial person, created by law, having a continuity of existence, either definite or indefinite, and capacity to do authorized acts, and capable, however numerous the persons that compose it may be, of acting as a single individual." As defined by Elliott in his standard work on Railway Law, a corporation is "a body consisting of one or more persons, established by law for certain specific purposes, with the capacity of succession and with special privileges not

possessed by individuals, yet acting in many respects as an individual."

As these definitions state, a corporation is a creation of law, by means of which several individuals may act as one person in the performance of certain acts which they are authorized to execute by the law creating the corporation. This "artificial person" called the corporation has a continuity of existence which may be either for a limited and definite period of years or for an indefinite time.

A partnership is a business organization consisting of two or more individuals who contract with each other for the transaction of a certain line of business. The organization thus created terminates with the death of either or any member of the partnership, and the obligations contracted by the firm in carrying on its business become the obligations of each partner. In this respect the partnership differs from the corporation in that the stockholders of the corporation are usually liable only to the amount of their investment or holdings of stock in the organization. In some cases the stockholder in a corporation may be liable to twice the amount of his stock, but that is not usual.

The persons composing the corporation are the stockholders, and in the larger railroad and industrial corporations of to-day they may number thousands. Inasmuch as it is impossible for a large body of stockholders personally to exercise management of the business of the corporation, it is usual for them to have annual meetings at which a limited number of persons are elected directors. The directors thus chosen usually elect a president, vice-president, treasurer, secretary, and various other subordinate officers, whose business it is to carry on the details of the work under the general supervision and control of the directors. The subordinate officers are

responsible to the president; he is under the control of the directors, and they are held responsible to the stockholders, to whom they report at the regular meetings.

Corporations are of two general kinds: private and public. The ordinary manufacturing concern is an example of the former kind, while the city or borough government is an instance of the latter. The railroad corporation partakes of the nature of both kinds. Legally it is to be classed as a private corporation, but the services it performs are of a public nature. The railroad corporation is created to perform a service which in some countries is in the hands of the government, and which the various States and the National Government in this country would need to perform if the railroad corporations were not created by the Government to carry on the business of transportation.

The special characteristics of the railroad corporation and the private and public nature of the services it performs are well given by Elliott in the work just referred to. He says: "A railroad company or corporation is usually regarded as a private corporation, and justly so as contrasted with a strictly public corporation, such as a city, county, township, or the like governmental subdivisions, but it is not a private corporation in the strict sense that an ordinary business corporation is, for it is charged with duties of a public nature that distinguish it from a purely and strictly private corporation. In many respects a railroad corporation is a private corporation in all that the term implies, but in other respects it differs from a corporation upon which no public duties are imposed. . . . The doctrine of Chief-Justice Hale, that 'when private property is affected with a public interest it ceases to be *juris privati* only,' applies to a railroad corporation. It is not to be understood, however, from the fact that the property of a railroad company is de-

voted to a public use or 'affected with a public interest,' that it can be treated as a public corporation; on the contrary, a railroad corporation is classed as a private corporation, and its strictly private rights are as much beyond legislative control as are the rights of a purely private corporation."

The fact that a railroad is a quasi-public corporation is of great consequence because such corporations may be subjected to very detailed regulation by the state. Being created by the state to perform a service which the state would otherwise be obliged to carry on, the corporation may be compelled by the state to perform the service according to rules prescribed by the public authority, whose control may and often does go so far as to fix the prices which the corporation may charge for what it does. It will be found that there are no corporations or individuals engaged in the business of transportation for the public whose charges are not subject to governmental regulation. The railroads are no exception to this, and all railroad corporations, however local the character of their business, must fix their charges subject to the power of the State or United States courts to pass upon the reasonableness of the exactions required of the public.

The United States courts can pass upon the reasonableness of all railroad rates and fares fixed by the State legislatures, and this is true because a railroad corporation is a "person" in the sense in which that term is used in the fourteenth amendment to the United States Constitution, where it is stated that "no person shall be deprived of life, liberty, or property without due process of law." The United States Supreme Court has decided in a number of cases that the word "person," as used in this amendment, applied to railroad and other corporations. It is furthermore held that when the Constitution guaranteed to every person a due process of law in defense of his life, liberty,

and property, it assured him the right of appealing from the State courts to the United States courts in equity proceedings. No State can deprive persons subject to its authority of their property without due process of law, and if a State fixes so low a charge for a service performed by a corporation or an individual as to deprive such "person" of the property to which he is reasonably entitled, the person has the right of having the reasonableness of the charge passed upon by the United States courts. That is to say, under the fourteenth amendment the property of every person is subject to the protection both of the State and of the United States courts. Such being the case, all transportation companies, whether they are engaged in interstate traffic or in traffic confined entirely within one State or within a small section of a State, may have the reasonableness of the charges they make passed upon by a State or Federal court. Contrariwise, they can exact no charges whose reasonableness may not be tested in one of those courts by the interested shipper or passenger.

The railroad company derives its powers from a charter granted to it by the State. In our country most railroad and other charters are derived from the State governments, but the United States has the authority to incorporate railroad companies and grant them charters; indeed, in the case of some of the Pacific railroads the charters were derived from the United States. Incorporation may take place either by a special act of the Legislature of the State, or in accordance with general laws. Formerly nearly all charters were special acts of the legislature, but that practise led to corruption and favoritism, and most States have enacted general incorporation laws. Indeed the constitutions of many States prohibit the granting of special charters.

The railway charters granted to the companies that

constructed the first railroads in this country were very similar to the charters that had previously been granted to the companies that had constructed turnpikes and toll-roads; indeed, it was supposed at the beginning of railroad construction that the railroad was merely an improved highway upon which any individual might run his own car. A few years' experience showed that it was not practicable to manage a railroad in that way, and that it was necessary for the business done over the road to be under one centralized management. Railroad charters contained carefully drawn provisions in regard to the tolls that were to be charged individual users of the road. Some effort was made to protect the public interests by stipulating that when the earnings received by the railroad companies should exceed a fixed annual percentage the State might reduce the charges. In general, however, the charters granted in this country afforded very inadequate protection to the public. Our experience in this regard differed from that of European countries, where the state took special pains in granting its charters to provide for the detailed regulation of the service to be performed. In this country the States were so desirous of securing railroads that very few exactions were imposed upon any company that was willing to undertake a work deemed to be of such benefit to the State and to the general public.

It will be found that this lax and indiscriminate chartering of railway companies was responsible in part for numerous abuses in the railway service. In course of time "the railway question" came to occupy a very prominent place in public discussions, and thirty years ago the States undertook in a vigorous way to assume a degree of regulation of the railroads, for which they should have made, but did not make, provision in the charters they had previously granted.

In most foreign countries the railroads are chartered by the central government, but in our country each one of the States and Territories has and exercises the authority of incorporating railway companies. If the laws of the several States regarding incorporation were uniform, and if the provisions in the charters were alike or nearly so, this practise would not be disadvantageous; but as a matter of fact the laws and practises are not uniform, some States being much stricter than others. This fact has made the problem of the regulation of transportation by the several States a more difficult one than it otherwise would have been, and is one of the reasons why it is desirable for the United States Government to exercise its power to regulate commerce among the several States.

The railroad companies to-day are large and powerful organizations. The Pennsylvania system of railroads, for example, comprises many corporations, but they are practically under one management. The people who manage the Pennsylvania interests have more than $1,000,000,000 under their control, and there are other railway systems in the United States nearly as large as the Pennsylvania. The capital stock of each of the large railway corporations is distributed among a large number of owners. According to the report of the Industrial Commission, "the share-owners of the eastern trunk lines are reported to number 99,826. . . . It was estimated in 1897, by the late George R. Blanchard, that the total number of holders of stocks and bonds of the railroads of the United States was 1,250,000, including 950,000 stockholders and 300,000 bondholders." A medium-sized railroad company, such as the Illinois Central, illustrates in an excellent manner the distribution of ownership among the stockholders. In 1905 it had 9,123 shareholders, two-thirds owning less than $10,000 each of

stock. Fully half of the shares are owned in lots of $50,000 and less, the average of all holdings being $10,310. In May, 1908, the Pennsylvania Railroad Company had 59,406 shareholders owning 6,291,893 $50 shares, the average holding being 106 shares, par value $5,300.

Although the railroad corporations are becoming larger every year and the amount of railroad securities is increasing, there is, none the less, a remarkably wide distribution of ownership. The control of railway properties is coming more and more into the hands of a small number of groups of capitalists, but each group of capitalists comprises a multitude of individual owners, the concentration of control being the result of the delegation of authority to the limited number of financial leaders in whom investors have especial confidence. It is not necessary for an individual to own a majority of the stock in a corporation to obtain the practical control. As the corporations become larger and the stockholders become more widely distributed, control by the individuals or groups of individuals holding a minority of the shares becomes easier.

Most of the money used in the construction of railroads in this country was obtained by borrowing money. The bondholders furnished most of the capital used in railroad construction. When times are good and business active, railroad companies have no difficulty in paying the interest on their debts; but when times are bad and business dull, many corporations in the past have found their income insufficient to meet their current obligations. When a corporation is unable to make the payments it has agreed to make it is called insolvent, and the people to whom the corporation is in debt—that is, the bondholders or those from whom equipment has been purchased—may request a court to take from the officers of the railroad the management of the company

until the road again becomes solvent. When the court thus takes control of a road in the interests of the creditors, it takes the place of the corporation for the time being. If the court finds that the road can be put upon a paying basis, the court will keep the road running until the financial troubles are past. If, however, the court finds the railroad to be hopelessly insolvent it proceeds to sell out the property and to pay over to the creditors the sum received from the sale. On some occasions railroad corporations, foreseeing the approach of financial difficulties, have besought the courts to assume the management of their properties in order that the officials of the corporation might shield themselves from the consequences of their own acts. Such practises, however, are not justifiable, and in time will probably be made impossible by laws regulating the management of insolvent corporations.

REFERENCES FOR FURTHÉR READING

MEYER, B. H. Railway Regulation under Foreign and Domestic Laws. 1901. [A report prepared for the Industrial Commission and published in the report of that commission, vol. ix, pp. 897–1004. This contains a good discussion of railroad charters.]

Railway Legislation in the United States. 1903.

Those interested in the study of railroad law will find the subject fully covered in the standard treatises by Elliott, Redfield, and others.

CHAPTER VII

RAILWAY CAPITAL

The shares or certificates of stock issued by a corporation represent the investment made by the stockholders who are the owners of the company, but the property of the railroad company is usually obligated to people who have loaned money to the corporation or who have made temporary advances of material or labor on credit. These temporary advances represent the company's "current liabilities." Persons loaning money to a corporation receive a bond or certificate of the company's indebtedness to them, and these bonds are accompanied by a mortgage which enables the bondholders to take possession of a part or all of the property of the company, if it does not pay the interest and principal of the loan, according to the terms of the contract specified in the bond. The bonds represent the company's funded debt.

Strictly speaking, the capital of a corporation comprises only the stock that has been issued; but in the case of the railroads of the United States it is customary to include bonds as well as stocks in the capital. The reason for this is that the issue of bonds has been the means by which a large share, indeed the greater portion, of the funds was secured for the construction of the railroads. The bondholders have frequently created the property against which their mortgages lie. The full amount of

the investment can be ascertained only by taking account of both the stock and the bonds or funded debt. The current liabilities of the railroad companies are not now counted a part of the capitalization, although they were so included in the statistics compiled by the United States Interstate Commerce Commission until 1896, when it was decided that only regular investments should be considered as capital.

Various classes of bonds are issued by railroad companies to secure capital, but they all fall under one or the other of two heads: they are either mortgage bonds or debentures. The holder of the mortgage bond has a lien on some specific and tangible property of which he can take possession if the interest and principal of the loan are not paid. The mortgage may cover rolling-stock, terminals, or the entire physical property of the borrowing company—i. e., the creditor may hold equipment bonds, terminal bonds, or a general or "blanket" bond. Moreover, the payment of these bonds may be secured by a first mortgage or by a second, third, or fourth mortgage—the holders of all but the first mortgage being called junior lienors.

Debenture bonds may represent a claim on the income derived by the borrowing railroad company from specified sources, or they may rest on no other security than the credit of the company. Whatever the class of bond, the claims of the bondholder precede those of the stockholder. No dividend can be declared on the stock until the current interest charges have been met and the principal of matured bonds has been paid. In England railroad bonds are of the debenture kind, but in the United States creditors usually prefer the security of a mortgage. Income bonds are sometimes, but not extensively, issued in our country.

On the 30th of June, 1906, the total capital of Amer-

ican railroads amounted to $14,570,421,478,[1] of which total about half—$6,803,760,093—consisted of stocks, and $7,766,661,385 of funded debt. During the decade ending in 1906 there was an increase of 38 per cent in the total of stocks and bonds of American railroads. The growth of mileage was 23 per cent, considerably less than the addition made to capital. Stocks decreased in comparison with bonds. In 1896 stocks comprised 49.46 per cent of the total capital, and in 1906, 46.69 per cent. Until 1895 the amount of bonds issued exceeded the stock, but because of the business depression at that time, many roads had become insolvent and found it necessary to reduce their fixed charges by substituting stock for bonds. It seemed probable that railroad companies would thereafter make use of stocks more than bonds to secure additional funds, because a strong road having an assured traffic can find a ready market for its stocks. Since 1900, however, bonds have been substituted for stocks in the purchase of one road by another, and this is probably a permanent tendency resulting from the process of consolidation and extension. As the large companies unite in combinations they will doubtless secure additional capital in the future quite as largely from the sale of bonds as from the issue of stocks.

The capitalization per mile of railroad in the United States averaged $67,936 in 1906. There are great differences in the various roads as regards the amount of capital per mile of line, some having only $10,000 of capital per mile, while others have from $300,000 to $500,000. A single-track road across a level section of a new portion of the country, where the right of way and terminal facilities can be cheaply secured, may be constructed for

[1] Of this sum the railroad companies in their corporate capacity owned $2,257,175,799 of stocks and $641,305,030 of bonds, a total of $2,898,480,829 of stocks and bonds.

a small fraction of what it costs to build lines over mountains or between large cities in populous regions, like the eastern United States or western Europe, where real-estate values are high. Cost, however, is only one of the causes accounting for differences in capitalization. Variations in capitalization among different companies arise from the fact that some systems, like the Pennsylvania, Illinois Central, and others similarly managed, have issued stocks and bonds in a conservative rather than a speculative spirit; whereas, some companies, notably those owning most of the Pacific roads, formerly pursued a policy of capitalizing their properties as largely as possible.

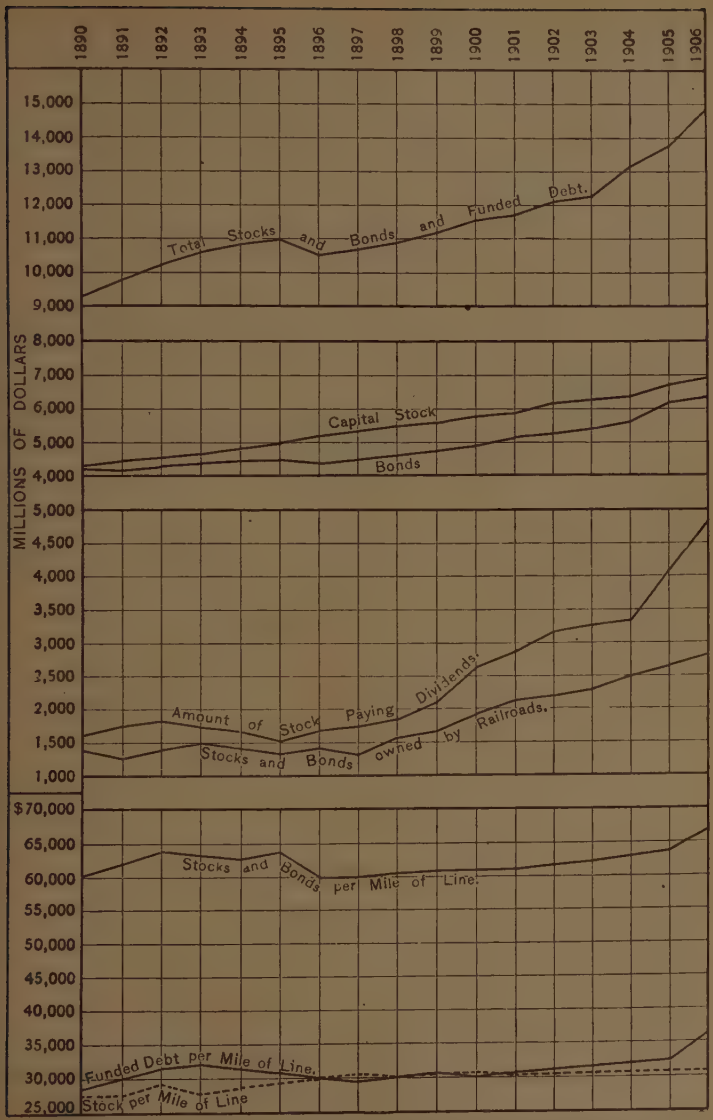
The average capitalization of the railroads of Great Britain is over $278,000 per mile, or more than four times the average for the United States. This difference is due to several causes. The British companies had larger expenses for right of way and terminals, and they built their roads more solidly than was customary in the United States. The British companies, unlike most of those in America, charge practically all improvements to capital and not to revenue. Some American companies expend more of their earnings for betterments and new construction than they distribute in dividends.

The capital of American railroads is increasing, partly from the fact that new lines are being constructed, but more because existing roads are becoming of greater value with the progress of the country and the growing volume of rail traffic. To some extent this enhancing value of railroad property is being capitalized by the issue of new securities. During the year 1900, for instance, when there was a very large increase in capital, amounting to $457,000,000, there was probably not over $120,000,000 used in building the 4,051 miles of new roads; the remaining $337,000,000 represented a higher

capitalization of roads previously constructed. The recent increase in capital, however, does not equal the total growth in the value of railroad property. Many stocks formerly issued have become more valuable during the past few years.

In the case of many American railroads built after 1850, particularly in the Western and Southern States, the stock represented very little investment. Most of the money used in construction was secured by the sale of bonds, the stock being sold cheaply or given as a bonus to the purchasers of bonds. The stock thus cheaply secured gave investors the possibility of large gains through an increase in the value of the stocks, should the railroad develop a large traffic. Stock sold or issued for less than its par or face value is called "watered stock," the amount of water at the time of sale being the difference between the selling and par values. The stock of many American railroads has been largely watered. One evidence of this is the fact that in the highly prosperous year of 1900 less than half the railroad stock of this country received any dividend, and in 1906 only about 66 per cent received dividends. In 1897 only 28 per cent of the stock received dividends. The diagram shows for the period 1890–1906 the total amount of railroad stocks and bonds, the amount of stocks receiving dividends, and the capitalization and funded debt per mile of line.

Some stocks on which no dividends are received may have a selling value for speculative purposes, and others from which no income is now obtained may represent a real, although unfortunate, investment; but in general, non-dividend stocks stand for water instead of real investment. Moreover, many stocks receive small dividends and are quoted on the market much below par. They also consist largely of water. It is thus evident that



AMERICAN RAILWAY CAPITALIZATION, DIVIDENDS, AND FUNDED DEBT, 1890–1906.

American railroad stocks have a par value greater than the real capital received by the companies issuing the stocks. This is not true of some railroad companies which have closely restricted the issue of stocks and have sold them at or near or above par. Nor is it equally true of all sections of the United States, there being less fictitious value in the stock of the New England roads than in those of any other part of the country. The Middle Western States, comprised in Groups VI and VII of the Interstate Commerce Commission's report, follow New England, while the railroads in the Pacific and Southwestern groups have the greatest showing as regards the amount of water in their stock. (See map.)

These facts are corroborated by an investigation that was made by the Interstate Commerce Commission. In February, 1901, the United States Senate called upon the Interstate Commerce Commission for a statement comparing the par and market values of all classes of railroad securities during the year ending June 30, 1900. The report, made by the commission February 24, 1903, indicates that the $10,911,968,970 of securities (par value) whose market values could be ascertained, had a total average market value in 1900 of $8,351,103,523; but the commission is careful to point out that the figures are only approximately correct. There were securities with a par value of $812,066,859 whose selling value could not be ascertained. Moreover, the commission calls attention to the fact that the prices paid for the securities bought and sold can not safely be accepted as the measure of the value of the securities not on the market; and also that the values of the securities listed on the stock-markets are not necessarily "a just measure for the valuation of the property." However, in spite of the recognized limitations of the facts presented in the commission's report, the data there presented indi-

A Map showing the Ten Groups of Railways.

cate that there was in 1900 a considerable difference between the market and par values of railroad securities. Market values, of course, depend mainly on the income obtained from the securities; but if stocks and bonds had uniformly been sold at or near par, the comparison of par and market values in 1900 would have shown the market values to have been greater than the par values.

In addition to the motive for stock watering cited above—the distribution of stock among bond purchasers gratis or at a low price—there are three other incentives to the issue of large amounts of stock. In financing corporations it has been found that greater profits can be secured from the sale of large amounts of stocks and bonds at a low figure than from the sale of small issues at a high price. Investors prefer securities affording opportunities for speculative gains. Ten million dollars of 3-per-cent bonds will sell for more than $6,000,000 of 5-per-cent bonds, although the income at the beginning would be the same from each investment. Another motive for stock watering is the desire to capitalize the future growth in the earnings and value of the property; the large volume of stock is not issued by the company for immediate sale, but to be held by the individuals composing the company in order that they may have an ample basis for the distribution of future profits which they anticipate will be large. This plan of large capitalization also enables the company to conceal from the general public the real amount of its profits. Large profits are secured from low rates of dividends and from securities having a low valuation, and this is advantageous from the investor's standpoint in a business such as railroad transportation, where the charges for services are subject to public regulation.

The men who "promote" and underwrite new corporations or the consolidation of competing companies

have derived special gains from the device of stock watering. The business of the promoter is to organize a corporation or a combination of corporations and to induce those affected to agree to the conditions of organization. If several companies are to be united, the promoter first secures from each company an option for purchase at a fixed sum; and then he fixes the capital of the new consolidated corporation at a sum much in excess—usually about double—the total capital of the constituent concerns. The several companies are paid in cash or with preferred stock, and more or less common stock is usually thrown in as a bonus. A large share of the common stock is retained by the promoter to remunerate him for his services. The promoter is usually paid in watered stock, from the sale of which his profits are derived.

To insure a sale for the stock, a banking-house is secured to underwrite the stock of the new company. The banker agrees to sell a certain amount of stock at a fixed price, or, failing to do so, to take the stock he does not dispose of. The underwriter sometimes guarantees the bonds of the new company. His services are of great importance to the promoter and the company, and he receives large pay, either in the form of cash or of stock. In many instances the promoter and the underwriter are the same individual or business organization.

The methods by which stock watering may be accomplished are numerous. A generation ago, when the standards of railroad financiering were lower than they now are, the securities of a railroad were sometimes increased at the will of speculators for the purpose of manipulating the market. The history of the Erie Railroad and other transportation corporations, when in the hands of speculators and unscrupulous operators, affords conspicuous examples of fraudulent practises.[1]

[1] Cf. Chapters in Erie, by Charles Francis Adams.

Another fraudulent method of dealing with stocks and bonds much in vogue between 1860 and 1880 consisted of awarding large amounts of securities to construction companies which were composed of officials of the railroad corporation. One of the most noted construction companies of this kind, though only one of many, was the Crédit Mobilier, to which the contracts for building the Union Pacific Railroad were let.[1] This method of defrauding the stockholders not in the ring of interested officials has a parallel in the exorbitant payment of securities to the syndicate of bankers that finances the enterprise of constructing a new road or assumes the task of reorganizing an insolvent company. According to the report of the Industrial Commission, "the original Southern Pacific cost actually only $6,500,000; although it is a matter of record that $15,000,000 was paid to a construction company, and the bankers' syndicate, which financed the road, received $40,000,000 in securities, or an average of $6 in bonds and stock for each dollar of actual cost." These methods of stock watering are not characteristic of railroad construction and financiering to-day, but they have not been entirely eliminated. Stock watering is accomplished at the present time in a variety of ways. One method is to distribute a new issue of stocks among the stockholders either as a bonus or to sell it to them below par or for less than the price which could be obtained in the open market. A railroad is sometimes in the fortunate position of having a revenue sufficient to pay large dividends and to add largely to the undistributed surplus. By increasing the stock the rate of profits or dividends can be kept at a lower figure, and any unneeded surplus reserve can be turned over to the stockholders.

[1] See histories of the Union Pacific by Davis and by White; also The Crédit Mobilier by Crawford.

Railroad companies having an undesirably small revenue sometimes add to their funded debts, and thus to their capitalization, by converting current liabilities, such as bills payable, wages and salaries due, into interest-bearing scrip. This kind of financiering is a temptation to which companies are apt to yield during protracted periods of business depression, but it violates the principle that current expenses should be paid from current earnings.

The retirement of bonds by the issue of stocks much in excess of the amount of the bonds canceled is resorted to by some companies. This is done for two reasons. By reducing the funded debt, the fixed charges are lessened, and the difficulties of weathering financial depressions are made lighter. Similarly the large volume of stock is useful in times of prosperity, because it affords an ample basis for the distribution of large profits in dividends at a low rate per cent on the capitalization. In the reorganization of insolvent companies, the fixed charges are frequently reduced by the substitution of stocks for bonds.

The consolidation of railroad companies is frequently accompanied by a large increase in capitalization. This has been notably the case with the consolidations that have taken place since 1898, and has been even more characteristic of the mergers of street-railways than of trunk-line railroads. In making the purchase of the Chicago, Burlington and Quincy by the Great Northern and Northern Pacific interests, and in the transfer of the Lake Shore to the New York Central, the stocks of the selling companies were exchanged for bonds of the purchasers, $2 of bonds being given for each dollar of stock. The Northern Securities Company, organized in 1901 to hold the securities of the Great Northern, Northern Pacific, and Burlington systems, exchanged

$180 of its stock for $100 of Great Northern stock and $115 of its stock for $100 of Northern Pacific stock. Competing railroads are consolidated for the purpose of stopping the expenses due to competition, and to introduce a more economical administration of the properties. These anticipated savings are usually capitalized in advance by the issue of additional securities.

There are differences of opinion as to whether the watering of stock should be practised by railroad companies or permitted by the Government. There is little doubt that the practise gives greater scope for speculation, some forms of which are decidedly objectionable. The company with a large capitalization and a consequently low rate of dividends has a plausible reason for opposing the payment of higher wages to its employees and for objecting to a reduction of the rates and fares charged the public. The actual relation of capitalization to railway charges is difficult to determine, and the discussions of the subject show a difference of views among students of transportation, but there is no doubt that a railroad company whose rate of dividends is small is less liable to have its charges reduced by public authority than it would be if its regular dividends showed a high rate of profits. The excessive watering of stock is certainly opposed to conservative railroad financiering. The best managed companies have carefully limited the amount of their securities, both bonds and stocks. The promoter and speculator find their opportunity in the practise of watering stock, but the general investor and the responsible managers of railroad properties are safer under a policy of restricted capitalization.

The manner and extent to which railroad capital should be limited by public regulation may be understood better after considering the basis which should be accepted in determining whether a railroad is or is not overcapital-

ized. Different views obtain as to the proper basis for capitalizing a railroad. Some persons claim that the original cost of the property and the money actually invested at the beginning and subsequently should determine the amount of capital issued. Others hold that the earnings of a railroad afford the true measure of the volume of capital that may safely be adopted, while some persons consider the true basis of capitalization at any given time to be the cost of reproducing the railroad—the sum it would require to obtain the right of way, construct the line, and acquire the terminals.

The most natural supposition is that railroad capital should represent the cost of the property, the money actually invested, that stocks and bonds should be issued only for money paid in, and that their par value should approach as closely as practicable their actual value at the time of issue. This theory is not altogether satisfactory, however, because some roads have cost more than they ought on account of inefficient or fraudulent management, or because they were constructed at a time when labor was scarce, materials expensive, and interest rates high. Under such conditions cost gives a capitalization higher than would be just to the public at the present time. Likewise, some roads have been very economically built, and have been managed with such ability and honesty as to have had their value greatly increased. Business ability should have its rewards, and a rule regarding capitalization which would not give men the results of their efforts would be neither just to them nor in harmony with the best interests of the public.

The basis for capitalization preferred by the men interested in railroad management is the earning capacity of the property. The selling value of the railroad is determined by its earnings, and that its selling value, present

and probable, may justly be fully capitalized, is the contention of those who accept this theory. This plan of capitalization enables a railroad company to obtain money from investors more readily, since many persons prefer to buy securities at a discount because of the chance of securing profits from the advance in the price of the securities with the growth of the earnings of the railroad. There are certain objections to this theory of capitalization, one being that the excessive capital conceals real profits, and makes it difficult for the men who serve the company or the public served by the corporation to determine whether the men who own the property are receiving more or less than a just return on their investment, whether the company, the employees, and the public are sharing equitably in the benefits. To permit a railroad company to secure the greatest possible earnings from the public, and to cover up the relation of profits to actual investment by issuing stocks or bonds without limitation, is not in accord with present views as to the public obligations of carriers.

Does cost of reproduction or duplication afford a satisfactory and fair basis for capitalization? This theory has been accepted by some of the State railroad commissions, and has been followed by several courts. The Interstate Commerce Commission, however, and the United States Supreme Court have not adopted this rule. In order to determine what rates a railroad company may reasonably charge, the courts and commissions are obliged to decide how much capital is justly entitled to receive profits from the company's earnings—i. e., they are compelled to determine the actual and just value of the property; for it may be assumed that its owners may properly issue capital to the amount of a just valuation of the railroad. The amount of money invested in the property does not reveal the true present value for

reasons already stated. The earning capacity of the railroad can not equitably or logically be made the sole criterion of value, because the rates, and hence the earnings, should depend to some extent at least upon the amount of capital justly entitled to profits.

The solution of this difficult question seems to be found by taking into consideration both the cost of reproduction and the earning capacity in determining the basis of capitalization, and this method has been followed in a general way by numerous courts and commissions. Definite rules for applying this method were worked out by a State Tax Commission, in Michigan, in 1900. In determining the value of the physical properties of the railroad—its road-bed, rolling-stock, terminals, etc.—the cost of duplication was made the basis of valuation. The railroad company's franchise, the special concessions granted to it by public authority, and the special commercial opportunities upon which its business depended —that is to say, all the non-physical or immaterial elements of its property—were valued in accordance with their earning capacity. To ascertain the value to be attributed to these non-physical properties, a method suggested by Prof. Henry C. Adams was followed. According to the method devised by Professor Adams, the value of these immaterial properties "was determined (1) by deducting aggregate expenses of operation from gross earnings and adding the income from corporate investments; (2) by deducting from the total income thus obtained an amount properly chargeable to capital—that is, a certain per cent on the appraised value of the physical properties—rents paid for the lease of property operated, and permanent improvements charged directly to income; (3) by capitalizing the remainder at a certain rate of interest." [1]

[1] Report of Industrial Commission, vol. xix, p. 412.

This method of valuation gives a basis for capitalization that seems to be equitable to all parties in interest —the public, the investor, and the railroad company. The valuation thus determined also affords a fair basis for taxation.

The excessive capitalization of their properties by many railroad companies for the purpose of securing the greatest possible amount of money from the investing public, and the speculative—sometimes fraudulent—manipulation of railroad securities, have probably made the cost of securing transportation services greater than it need have been, and have made railroad bonds and stocks a much less reliable form of investment than they might have been. The desirability of careful and intelligent public regulation of the issue of stocks and bonds by railroad corporations seems manifest. Some of the States have undertaken to do this.

Massachusetts has the most effective laws. The distribution of stock as a bonus to purchasers of bonds has not been permitted, and an anti-stock-watering act, passed in 1894, stipulates that "no railroad corporation or other public service company shall declare any stock or scrip dividend, or divide the proceeds of a sale of stock, or scrip, among its stockholders, or create any additional stock or issue certificates thereof to any person, unless the par value of the same shall be paid in cash to the treasurer." The administration of the law is in charge of the State Railroad Commission, and the statute has accomplished good results.

Texas has a law limiting the amount of bonds and other indebtedness to what the State Railroad Commission shall deem a reasonable valuation of the railroad property, and Minnesota has a statute requiring that all stock issued by a new railroad company must be sold at par, and that there shall be no increase of stock without

the consent of the State Railroad and Warehouse Commission. In Kentucky railroad companies can increase stock only with the consent of the Railroad Commission, and the amount of indebtedness must never exceed the total cash paid in. Several other States have laws by which public control over railroad capitalization is exercised, but the Massachusetts statute is the one that meets the situation most adequately.

Many persons, including some railroad officials and State commissioners, believe that the Federal Interstate Commerce Commission should be endowed by Congress with powers over the capitalization of interstate railroads similar to the authority possessed by the Massachusetts commission concerning the issue of securities by the corporations of that State. There was some question as to the practicability of the execution of such a national law before the passage of the Hepburn act of June 29, 1906, enlarging the duties and powers of the Interstate Commerce Commission; but there are now excellent reasons why both the United States and the several States should promptly legislate to prevent the evils resulting from stock watering.

A law enacted by England in 1900 to enforce publicity and responsibility in the organization and management of corporations promises to restrict the objectionable practises sometimes adopted by the "promoters" of companies and by directors who may desire to manipulate the affairs of the corporation in their own rather than the stockholders' interests. It is a detailed statute requiring much greater publicity in the management of corporations than is customary in the United States, but its provisions are worthy of careful consideration by those who may attempt to deal with the question of public regulation of the capitalization of the railroads in the United States.

REFERENCES FOR FURTHER READING

CLEVELAND, F. A. Funds and their Uses. 1902.

MEADE, E. S. Trust Finance. 1903.

Report of the Industrial Commission. Vol. xix, pp. 397–419, 1902.

Statistics of Railways of the United States. [An annual report by the Interstate Commerce Commission.]

Senate Document No. 178, Fifty-seventh Congress, Second Session. [A report made February 24, 1903, comparing the par and market value of railroad securities for the year ending June 30, 1900.]

CHAPTER VIII

EARNINGS, EXPENSES, AND DIVIDENDS

THE revenues obtained by the railroad companies are derived mainly from the freight and passenger services. The payments received for the transportation of mail and express matter are of considerable amounts, but as the mail and express cars are always attached to passenger-trains, the receipts which the railroads obtain from the Government and the express companies for running those cars are credited to the passenger service. In connection with both the freight and passenger services there are earnings not derived from the operation of trains, such as receipts for the rental of cars and terminal facilities of various kinds. Moreover, some railroad corporations lease their tracks to other companies and own the stocks or bonds of other companies—both railroad and industrial—and the rentals and the interest or dividends on these investments constitute sources of revenue.

A general grouping of railroad revenues may be made into (1) those derived from the operation of trains, and (2) those obtained from interest on loans and investments, and from rentals. In the accounts and reports of railroad companies each of these groups is divided into several subclasses. The annual statistical report published by the Interstate Commerce Commission summarizes the earnings of railroads as is shown by the table on the following page.

Comparative Summary of Earnings and Income and Analysis of Earnings from Operation for the Years Ending June 30, 1906 and 1905

Source of Income.	Gross Amount.		Proportion to Total Earnings.		Proportion to Total Earnings and Income.		Increase 1906 over 1905.	
	1906.	1905.	1906.	1905.	1906.	1905.	Amount.	Per cent.
			Per ct.	Per ct.	Per ct.	Per ct.		
Passenger revenue	$510,032,583	$472,694,732	21.93	22.70	19.75	20.42	$37,337,851	7.90
Mail	47,371,453	45,426,125	2.04	2.18	1.83	1.96	1,945,328	4.28
Express	51,010,930	45,149,155	2.19	2.17	1.98	1.95	5,861,775	12.98
Other earnings, passenger service	11,314,237	11,040,142	.48	.53	.44	.48	274,095	2.48
Freight revenue	1,640,386,655	1,450,772,838	70.54	69.67	63.52	62.69	189,613,817	13.07
Other earnings, freight service	5,645,222	5,080,266	.24	.24	.22	.22	564,956	11.12
Other earnings from operation	59,741,198	52,319,148	2.57	2.51	2.31	2.26	7,422,050	14.19
Unclassified	262,889	.....	.01	.....	.01	.....	262,889	.....
Total earnings from operation	$2,325,765,167	$2,082,482,406	100.	100.	90.06	89.98	$243,282,761	11.68
Income from other sources	256,639,591	231,898,553	.....	.....	9.94	10.02	24,741,038	10.67
Total earnings and income	$2,582,404,758	$2,314,380,959	.....	.....	100.	100.	$268,023,799	11.58

It will be observed that the table gives separately the income from operation and from "other sources," and that of the total earnings and income of the railroads barely one-fifth is derived from the transportation of passengers, and that about two-thirds is obtained directly from the freight business. One-twenty-fifth of the total receipts comes from the mail and express services, and one-tenth from sources of income distinct from the operation of trains. The "gross" or entire income derived from the operation of the American railroads in 1905 amounted to $2,082,482,406, and in 1906 the total was $2,325,765,167.

The table gives the income from "other sources" as having been $231,898,553 in 1905, and $256,639,591 in 1906, but these figures for income from other sources involve duplications, if all the railroads of the United States be considered as one system. To eliminate these duplications it is necessary to subtract the sums received for the lease of roads ($114,473,139 in 1905, and $119,604,619 in 1906), because they represent merely the transfer of funds from one company to another—from one part of the American railroad system to another. The same is true of interest on bonds and dividends on stocks paid by one company to another. The intercorporate payments in 1905 were $180,172,803; in 1906, $196,119,285. The subtraction of these sums from the total income from other sources gives "clear income from investments" amounting to $51,725,750 in 1905, and to $60,520,306 in 1906. Considering the railroads of the United States as a single system, the actual income in 1905 and 1906 is shown on page 100.

The accompanying figures refer to the "gross" earnings and income. An examination of expenditures will show what disposition is made of the revenues. Payments are made to meet three general sources of expense. The

first and largest is "operating expenses," of which there are four large subclasses: maintenance of way and structures, maintenance of equipment, conducting transportation, and general expenses. The second general source of expense is "fixed charges"—the necessary payments for interest on funded and floating debts, for rentals, for taxes, and for the sinking-fund, if provision is made for such a fund. The third expense is for the payment of dividends, first on the preferred stock and then on the common.

Comparative Income Account of the Railways of the United States, considered as a System, for the Years ending June 30, 1906 and 1905:

Item.	Amount.				
	1906.		1905.		Increase.
Gross earnings from operation.	$2,325,765,167	.....	$2,082,482,406	.....	$243,282,761
Clear income from investments	60,520,306	....	51,725,750	.....	8,794,556
Gross earnings and income...	.. ..	$2,386,285,473	.....	$2,134,208,156	252,077,317

The surplus remaining after paying the operating expenses and fixed charges is generally called the net earnings. The net earnings represent the profits of the business, and from them are first subtracted the amounts required for dividends on the preferred stock, next such a sum as the company may think best to add to the surplus or to the "profit and loss" account, and then the remainder is distributed among the holders of common stock.

The statistical report of the Interstate Commerce Commission summarizes in the following tabular form the expenditures of railroad companies for operating expenses and fixed charges:

Comparative Summary of Expenditures and Analysis of Operating Expenses for the Years ending June 30, 1906 and 1905

Source of Expenditure.	Amount.		Proportion to total operating expenses.		Proportion to total expenditures.		Increase, 1906 over 1905.	
	1906.	1905.	1906.	1905.	1906.	1905.	Amount.	Per ct.
			Per ct.	Per ct.	Per ct.	Per ct.		
Maintenance of way and structures	$311,720,820	$275,046,036	20.28	19.78	14.66	14.39	$36,674,784	13.33
Maintenance of equipment	328,554,658	288,441,273	21.38	20.74	15.44	15.09	40,113,385	13.91
Conducting transportation	836,202,707	771,228,666	54.41	55.46	39.32	40.36	64,974,041	8.43
General expenses	59,752,230	55,319,805	3.89	3.98	2.81	2.90	4,432,425	8.01
Unclassified	646,856	566,372	.04	.04	.03	.03	80,484	14.21
Total operating expenses	$1,536,877,271	$1,390,602,152	100.	100.	72.26	72.77	$146,275,119	10.52
Fixed charges, operating roads	590,125,117	520,293,672	.....	.....	27.74	27.23	69,831,445	13.42
Total expenditures, operating roads	$2,127,002,388	$1,910,895,824	.....	.....	100.	100.	$216,106,564	11.31
Fixed charges subsidiary roads	70,216,042	76,394,748	.....	.....	.....	.....	6,178,706	8.09
Total expenditures all roads	$2,197,218,430	$1,987,290,572	.....	.....	.....	.....	$209,927,858	10.56

The fixed charges paid are shown in two parts by the table, those paid in subsidiary railroad companies being separately stated. Over seven-tenths of the total expenses for operating roads and for fixed charges were due to operating expenses, and less than three-tenths for fixed charges. An interesting fact not shown by the table is that about 66 per cent of the entire income from operation was absorbed by the operating expenses; the remaining 34 per cent went to meet fixed charges and to remunerate the stockholders.

By a table showing both earnings and expenses it is possible to indicate the amount of the net income, the sum distributed as dividends, and the funds credited to the surplus. The table is also from the report of the Interstate Commerce Commission:

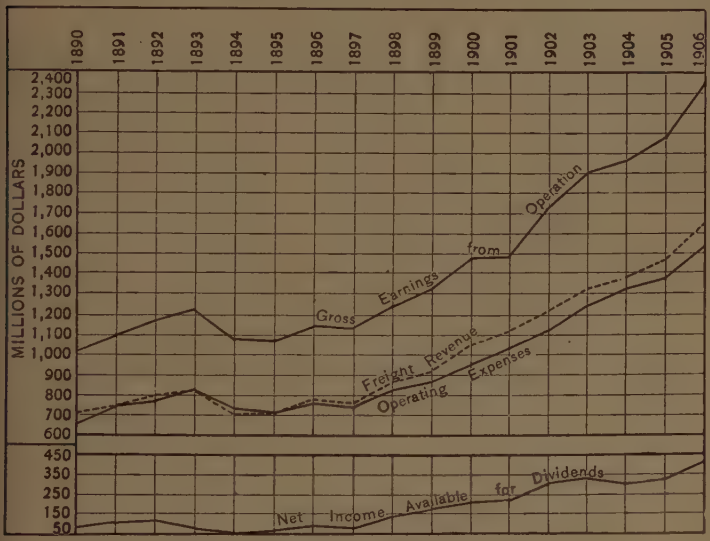
Comparative Condensed Income Account for the Years ending June 30, 1906 and 1905

Item.	Amount.	
	1906.	1905.
Gross earnings from operation	$2,325,765,167	$2,082,482,406
Less operating expenses	1,536,877,271	1,390,602,152
Income from operation	$788,887,896	$691,880,254
Income from other sources	256,639,591	231,898,553
Total income	$1,045,527,487	$923,778,807
Total deductions from income	660,341,159	596,688,420
Net income	$385,186,328	$327,090,387
Total dividends (including "other payments from net income")	272,851,567	238,046,897
Surplus from operations	$112,334,761	$89,043,490

The net earnings or income in 1906 were $385,186,328, of which sum $272,851,567 was paid as dividends. A part of the dividends was paid to other railroad companies, thus making the net dividend received by individuals

and corporations other than railroads somewhat less than the figures given. The surplus in 1906 amounted to $112,334,761. Somewhat less than one-fifth of the dividends went to the holders of preferred stock, and over four-fifths to the owners of the common stock.

As was stated in the previous chapter, less than half the stock received dividends in 1900. In 1906, 66.54 per cent of the stock shared in dividends. Some of the



AMERICAN RAILWAY EARNINGS, 1890–1906.

bonds, about 7 per cent of the total amount in 1900, and 3.82 per cent in 1906, obtained no interest payments. The prosperous times since 1897 have greatly increased the receipts of railway capital, particularly the stocks. The large issues of watered stock chiefly account for the fact that such a percentage of the stocks yields no income. Indeed, the purpose of stock watering is not to secure immediate income, but to secure larger present invest-

ments by speculative capitalists and to anticipate the future increase in the value of the property whose present earning capacity has been overcapitalized.

The chart (p. 103) shows graphically for seventeen years, 1890 to 1906, the gross earnings of American railroads, the revenue from the freight service, the operating expenses, and the income available for dividends. The chart also shows the effect of general business conditions upon railroad earnings and dividends. The balance-sheets of railroad reports are an accurate business index. During the prosperous years of 1890, 1891, and 1892 gross earnings rose rapidly, and then with the financial depression which began in 1893 they fell off sharply. The position held in 1892 was not regained until near the close of 1897, after which time the increase in earnings was continuous and rapid as the result of the exceptionally prosperous times that prevailed during the ten years preceding the depression of 1907–08.

Other less obvious facts are illustrated by the chart. As gross earnings rose rapidly from 1890 to 1893, the net income available for dividends rose slowly and actually declined during 1892. The larger earnings were being absorbed by the fixed charges and the operating expenses, especially the latter. It being the practise of American companies to pay for additional equipment, for improvements and new construction largely from earnings, as well as by the sale of bonds and stocks, a portion of the earnings received during prosperous times is used in betterments and extensions. What occurred during the three years preceding 1893 has taken place on a much larger scale since 1897. The influence of the bondholder is greater than that of the stockholder in shaping the finances and management of American railroads, and present profits of the stockholder are restricted in order to strengthen the future earning capacity and

value of the property. This is, on the whole, fortunate, because this policy is bringing about constant improvements in our railroad system, and giving a better and more economical service.

A comparison of the freight-revenue line on the chart with the line for operating expenses shows that when earnings decline rapidly it is not possible to curtail operating expenses to an equal degree. Likewise, when there is a large increase in earnings the operating expenses, including the large expenditures for betterments, do not rise with equal rapidity. A large business is relatively less expensive than a small one.

The earnings of the railroads have been favorably affected by the betterments and resultant economies of recent years. In 1897 the freight-train load was 204 tons; in 1900 it was 271 tons; and in 1906, 344 tons. The average earnings per mile run by a freight-train in 1897 were $1.65; in 1900, $2; and in 1906, $2.608. While both the train-load and the earnings have been favorably affected during the last few years because of the large volume of traffic, they are none the less due to improvements in track, equipment, and management, whose influence on earning will be permanent.

The combined effects of economies in operation and of large volume of traffic are indicated by the average earnings and income per mile of line. The facts for eleven years, beginning with 1896, are shown by the table on page 106.

By comparing this table with the preceding chart, it will be seen that the facts regarding changes in earnings and operating expenses per mile are nearly the same as those for the entire railroad system. The changes in mileage have not been responsible for the changes in average earnings and expenses per mile.

When a railroad's net earnings are small, its stocks

Comparative Condensed Income Account per Mile of Line operated, for the Years ending June 30, 1906 to 1896.

Item.	Per mile of line operated.											Increase, 1906 over 1905.
	1906.	1905.	1904.	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	
Gross earn's from operation..	$10,460	$9,598	$9,306	$9,258	$8,625	$8,123	$7,722	$7,005	$6,755	$6,122	$6,320	$862
Less operating expenses.....	6,912	6,409	6,308	6,125	5,577	5,269	4,993	4,570	4,430	4,106	4,248	503
Income from operation...	$3,548	$3,189	$2,998	$3,133	$3,048	$2,854	$2,729	$2,435	$2,325	$2,016	$2,072	$359
Income from other sources...	1,154	1,068	1,003	1,002	981	919	846	793	749	683	709	86
Total income.....	$4,702	$4,257	$4,001	$4,135	$4,029	$3,773	$3,575	$3,228	$3,074	$2,699	$2,781	$445

will sell at a low figure and its bonds will not be sought after by investors. The price of securities rises with the increase in earnings, but the two movements are not usually parallel. Larger net earnings come during periods of prosperity, and it is then that speculation is very active; so active, indeed, as usually to make the prices of the stocks most dealt in rise much higher than the gain in net earnings would seem to justify. Similarly when net earnings fall off the speculative demand for the securities affected suddenly ceases and their prices drop out of proportion to the decline in earnings. The fluctuation in market value is much less for bonds than for stocks, but the bonds even are affected to a considerable degree by speculation, because speculation in the stock may result in changes of policy as regards capitalization or management that will seriously affect the value and marketability of the bonds.

In the case of most rail-

road companies the purchase of the bonds as well as the stocks is usually considered a risky venture for those seeking a safe and permanent investment. There are several companies whose bonds are in demand from insurance companies, savings-banks, trust companies, and other fiduciary organizations having funds to invest. There are also some companies whose stocks are considered fairly safe. In general, there has been a marked improvement in the merits of railroad securities as forms of investment, but speculation in them is still so active and so little restricted by public regulation as to make them less satisfactory and less beneficial socially than they might be as repositories of the savings of masses.

REFERENCES FOR FURTHER READING

Statistics of Railways of the United States. [Annual report by the Interstate Commerce Commission.]
Report of the Industrial Commission, vol. xix, pp. 267–272.

PART II

THE RAILWAY SERVICE

CHAPTER IX

THE FREIGHT SERVICE

The transportation service performed by the railroads includes the movement of freight, the carriage of persons, and the transmission of mail and express matter. Each of these services merits careful consideration.

Whether viewed from the standpoint of public benefit or considered with regard to the volume of business done and profits received by the company, the transportation of freight is the most important service performed by the railroad. The income from the passenger business is about one-fifth of the total earnings and income of the railroads in the United States, while the receipts from the freight amount to seven-tenths. Moreover, social welfare is more dependent upon cheap and unfettered movement of commodities than upon inexpensive and speedy means of travel; for, however important it may be that the relatively few people who may at any one time desire to take a journey should be able to reach their destination promptly and comfortably, it is of incalculably greater consequence that producers should be able to dispose of the commodities upon the sale of which their livelihood depends and that consumers should have the power of drawing upon distant as well as near sources of supply for the satisfaction of their wants and the gratification of their desires.

The volume of freight transported increases rapidly with the progress of civilization and the diversification

of men's wants. The freight business is carried on to enable men to secure what they want; and the more complex their demands the more goods will be produced and transported. The growing demand for the freight service has furnished a most powerful stimulus to inventors and engineers to lessen the obstacles to the movement of commodities by improving the tracks, cars, and locomotives, and making other changes in the railroad mechanism whereby the costs of transportation have been reduced to their present small amount. Whether the endeavor of railroad companies to increase the speed of their passenger-trains or their efforts to lessen the costs of freight movement have been the more potent incentive to mechanical improvements, it would be impossible to say; but the results accruing to society from those improvements have come more largely from the greater facilities for the shipment of goods.

During the year ending June 30, 1906, the railroads in the United States reported a freight traffic of 1,631,374,219 tons. This is a greater tonnage than shippers actually turned over to the roads, because the same freight is often handled by more than one road and duplications result from taking the total of all the traffic of all the companies. After making the deductions necessary to eliminate the duplications, it is found that the traffic actually received from shippers during that year amounted to 896,159,485 tons. The average distance traveled by each ton of freight was 240.89 miles, and the number of tons carried one mile—or the "ton-mileage"—was 215,877,551,241. To handle that vast tonnage of traffic required nearly 40,000 freight and switching locomotives and nearly 2,000,000 freight-cars.

The mines from which the coal, iron ore, and other minerals are taken furnish more than half the tonnage

handled by the railroads, but as this traffic is carried at low rates per ton the receipts from this business amount to much less than half the total freight revenue of the railroads. Manufactures supply over one-seventh of the tonnage, the products of the forest above one-ninth, and the products of agriculture about one-twelfth. The remainder of the traffic, comprising somewhat less than one-eighth of the total, consists of animal products, general merchandise, and miscellaneous unclassified commodities. There are no figures obtainable regarding the value of the goods which the railroads transport, but if their value does not average more than $25 a ton, their total worth would be nearly $22,500,000,000.

The articles comprised under the seven headings mentioned in the preceding paragraph include many thousand kinds of commodities. It is necessary for the railroad companies to group the goods into a small number of classes as a basis for fixing rates of charges for transportation. To have a separate rate for each of 9,000 or more commodities and the rate on each of them different between each two termini would be utterly confusing to the freight-agents and to the shippers.

Until 1887 nearly every large railroad had a classification of its own, but now most business is handled by one of three classifications. In the section east of the Mississippi River and north of the Ohio and Potomac—that is, in the New England and trunk line territories—a classification called the "Official" is in force. Its construction, revision, and supervision are in charge of a committee with headquarters in New York. South of the Ohio and east of the Mississippi the "Southern" classification is in operation under the control of a committee located at Atlanta. In the country west of the Mississippi the "Western" classification prevails, administered by a committee in Chicago. Some of the through

business to and from the Pacific coast points is done under a classification issued by the Transcontinental Freight Bureau, whose offices are in Chicago. In several States —Illinois, Iowa, Georgia, and some others—classifications have been prescribed by the State Railroad Commissions, the classification of each State applying only to the business carried on entirely within its boundaries.

The Western classification has ten and the Southern fourteen groups of commodities. The Official has six numbered classes, but the grouping is really into fourteen classes. The class to which an article is assigned in these classifications is determined by a variety of considerations. The class given an article affects the rate of freight it must pay, those commodities grouped as first-class paying a higher rate than those catalogued as second-class, and the second-class articles are obliged to pay heavier charges than those given a lower rating. The decision as to the class to which an article shall be assigned is in general determined by what rate the article under consideration ought to pay to remunerate the railroad for the expenses involved in its transportation, and also by what the article can pay—that is, whether it is a commodity of high value for the transportation of which shippers can afford to pay a relatively high rate. Articles are put into higher classes if their transportation is especially expensive to the railroads and if the value of the service to the shipper is large. The classification of freight is closely connected with the subject of rates, and the factors determining the classification of commodities will be indicated more clearly in the chapters on rates.

In all classifications the majority of commodities is placed in a different class when shipped in car-load quantities than when offered to the railroad in less than car-load lots. The class to which the article is assigned, and

consequently the rate it must pay, are made lower for the car-load quantity than for smaller consignments. The reason for this is that business can be done on a large scale more economically than on a small scale. The producer who ships in car-load quantities can usually supply the railroad not only with a large amount of freight, but with a regular volume of business, and can thereby enable the carrier to perform the service at much less cost per ton than business can be handled for the small shipper.

To illustrate the manner in which commodities are actually grouped in freight classifications and to bring out some of the facts influencing the rating of commodities, there have been compiled in the following table a few extracts from a former issue of the Official classification. The commodities are taken at random from the detailed classification comprising about 9,000 commodities.

Extracts from the Official Freight Classification No. 22

Description of Article.	Class for less than car-load lots.	Class for car-load lots.
Galvanized-iron cornices in section not set up and crated	4 × 1st class	3
Galvanized-iron cornices in section set up and crated	3 × " "	3
Chairs, cane or splint, set up	2½ × " "	..
Clothes-wringers, not boxed	2 × " "	..
Fruit-evaporators	1½ × " "	4
Clothes-reels, boxed	1st "	5
Clothes-wringers, boxed	2d "	4
Clothes-wringers stock in the white	3d "	5
Clothes-wringer stock, rough	4th "	6
Flour in quantities less than 25,000 pounds	5th "	..
Flour in quantities of 25,000 pounds and over	.....	6

It is evident from the above brief table that the classification of commodities is influenced by the space they occupy, and is also made to depend upon the value

of the articles. The expense of transportation to the shipper is made to vary with reference to the value of the commodities, and is in most cases conditioned upon the quantity of shipment. The difference in classification, and consequently in freight charges, between less than car-load and car-load quantities is a wide one, much greater than the variation in classification and rates for the lower groups.

It is never practicable to classify all commodities, and every railroad transports many articles—as, for example, live stock and coal—at special or commodity tariffs. The articles thus treated are invariably handled in car-load lots, and in many cases they are not included in the classification, because special conditions of competition between the railways and the carriers by water require that the articles should be especially favored by the railroads in order to prevent the diversion of the traffic to the lake or ocean vessels. The competition between the railroads engaged in transcontinental traffic and the lines of vessels navigated between our two seaboards gives rise to a well-known instance of the exemption from classification of a large number of commodities. The reason which most frequently influences a railroad to exempt a commodity from classification is the desire of the railroad to foster the development of new and special industries. Men who are engaging in new forms of production or are opening up previously undeveloped resources are constantly beseeching the railroad companies for special or commodity tariffs. The railroad companies thus besought by the shippers frequently have difficulty in deciding what course to follow. The railroad is always desirous of promoting as far as possible the industrial development of the section of country which it serves, but it is at the same time equally desirous of maintaining a schedule of freight charges high enough

to yield the owners of the railroad a fair profit upon their investments. The shipper desires to secure the lowest possible rate; the railroad company endeavors to maintain a profitable rate. Generally, however, the shipper succeeds in getting the commodity tariff. Some roads have more than a thousand special or commodity tariffs; the New York Central Railroad, for instance, in 1899 had 1,370 such tariffs in force, and the opposition of many shippers was aroused when at the beginning of 1900 a revision of the classification was made, by which 175 of these special tariffs were terminated.

Efforts have been made to unify the several freight classifications now in force and to substitute for them one uniform classification. If this could be done successfully it would be highly desirable, because it would enable producers of all commodities in different parts of the country to know accurately what would be the cost of getting their commodities to the market and how much freight they would have to pay upon the supplies brought to them by the railroads. The unification of the classification would also make it easier for shippers and for the State to detect discriminations. The enforcement of a published schedule of rates and the equal treatment of all shippers could be much more readily brought about. Many people, including the members of the Interstate Commerce Commission, have favored Federal laws requiring the railroads to adopt a uniform classification, and, in the case of their failure to do so, empowering the Interstate Commerce Commission to promulgate such a classification. Such a law came near being enacted in 1889; but Congress, upon the advice of the Interstate Commerce Commission, which thought the time had not then arrived for compulsory action, gave the railroad companies an opportunity to attempt to work out a single classification for the entire country. An earnest

effort was made by the railroad companies during the succeeding two years to accomplish this result. The attempt, however, was not successful. The differences in the three main classifications represent such variations in industrial conditions in different parts of the United States that the obstacles in the way of a uniform classification of the productions of different parts of our wide country up to the present time have been insurmountable. The unification of present classifications would require a general readjustment of rates and might fundamentally alter the existing conditions of competition between rival producing and manufacturing centers in different parts of the country. It will probably not be impossible to rearrange freight charges on the basis of a uniform classification so as to minimize the interference with industrial competition. Necessarily, some articles will have to be omitted from the classification and be given special or commodity tariffs. There are, however, serious objections to increasing the already large number of special tariffs. A joint committee attempted in 1908 to work out a uniform classification, but the time did not seem to be at hand when the work could be done without too great disturbance to business conditions.

Freight is usually spoken of as through and local. In a popular sense through freight means that which is transported a long distance, and local freight that which is moved only a short distance. The railroad companies, however, use the words in a more technical sense. By local freight they mean that which originates and terminates upon the same line—that is, freight carried between two points on the same road. Through freight is that which comes to the railroad company from some other railroad, or that which, originating at some point on the line, is turned over to some connecting carrier—that is to say, through freight is that in the transportation of

which more than one carrying company is employed. In general, the technical use of the terms corresponds with their popular meaning, but not always so. Some freight may travel hundreds of miles, pass State boundaries and move between great centers of population, and yet not leave the original line; while through freight may move only a short distance. The distinction between through and local freight is an important one for the railroads, because they are obliged to employ different methods of accounting when the business is handled jointly with another corporation than when it is confined entirely to their own line.

The great volume of freight business done by the railroads is conducted by the use of only a few business papers. The records kept are complete and are very simple. Upon delivering his goods to the railroad company at one of its freight stations, the shipper receives from the representative of the company a "receipt for freight" similar in form to a bill of lading (page 122), except that the rate of freight is usually not entered. Large shippers furnish receipts for freight in duplicate or triplicate form and the freight agent receipts the different forms, marking the second and third forms "duplicate" and "triplicate," or "copy." The shipper may send the original to the consignee or use it to secure a bill of lading. The second copy is retained by the railroad company, the third copy is kept by the shipper for his office records.

It is customary for shippers to exchange the receipt for freight for a bill of lading; but at places where no official is located who can issue a bill of lading the receipt for freight is issued and may be used for obtaining advances from banks, the same as bills of lading are used.

The bill of lading is made out in triplicate, the original and one copy are given to the shipper, who keeps the copy and sends the original to the man to

whom the goods are shipped—that is, to the consignee. The railroad company retains the other copy of the bill of lading. This bill of lading is in fact a contract which

FREIGHT BILL. G—199—A. F. B.

Bill No. ..... Station, ... 190

Way-bill No. ..... Date, ...

From .....

Car No. .....

To Pennsylvania Railroad Company, Dr.

Shipped by .....

For charges on the Articles named below:—

Original point of shipment .....

Original Car ..... No. .....

MARKS.	ARTICLES.	WEIGHT.	RATE.	FREIGHT CHARGES.		ADVANCES.		TOTAL.	

Received Payment for the Company.

..... 190 ..... Agent.

(DRAW CHEQUE TO ORDER OF THE PENNSYLVANIA RAILROAD COMPANY.)

SAMPLE FREIGHT BILL.

the railroad makes for the transportation and delivery of the articles named in the bill to the proper consignee. The bill is usually negotiable, and it is customary for

NOTICE OF ARRIVAL.

G—199—A. F. B.
S 65 8 x 16½ 4 5 1902.

Bill No. _____ Station, _____ 190

Way-bill No. _____ Date, _____

From _____

_____ Car No. _____

Shipped by _____

Original point of shipment _____

Original Car _____ No. _____

Pennsylvania Railroad Company.

The property described below, consigned to you, is now ready for delivery at the above-named Station, on payment of charges due thereon. Please send for the same immediately.

MARKS.	ARTICLES	WEIGHT.	RATE.	FREIGHT CHARGES.		ADVANCES.		TOTAL.	

To Freight Agent PENNSYLVANIA RAILROAD COMPANY

_____ Station.

Please deliver the property above described to _____

_____ 190 Signature, _____ CONSIGNEE.

Draw cheques to order of the Pennsylvania Railroad Company. [OVER.]

SAMPLE NOTICE OF ARRIVAL.

shippers to deposit these bills with the banks, which accept them for the value of the property described in the bill and give the shipper credit to that amount. The bills of lading are of two general descriptions: "uniform" and "special." The uniform bill of lading, which is used

C-32-a-A. P. R. [BILL OF LADING.]

Pennsylvania Railroad Company.

RECEIVED, subject to the classification in effect on the date of issue of this Bill of Lading,

at Munhall, Penna., Station, October 1st, 1901.

from Henry Doe the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as indicated below, which said Company agrees to carry to said destination, if on its road, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, in consideration of the rate of freight hereinafter named, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions, whether printed or written, herein contained (see conditions on back hereof), and which are agreed to by the shipper and accepted for himself and his assigns as just and reasonable.

MARKS.	DESCRIPTION OF ARTICLES.	WEIGHT. Subject to Correction.
	Fifty-Six (56) Steel Beams	46100

Consignee, Order of
Richard Roe
care of John Doe

DESTINATION
Place, Montreal.
County.
State, Canada.

Route, P.W.&C. to Lewistown Jct. Sunbury, Wilkes Barre, D. & H. and Grand Trunk Ry.

P.R.R. Car No. 17032 W. L. McKee Agent. (The signature of the Agent here acknowledges only the receipt of the property, and the charges as stated, if any.)

STAMP HERE.

The blank spaces below must not be filled up by the shipper.

The rate of freight from Munhall to Montreal, Canada is, in cents per 100 pounds:—

..... times
First Class, ..., Third Class ..... Sixth Class .....
First Class ..... Fourth Class ..... Special Class 20½
Second Class ..... Fifth Class .....

W. L. McKee Agent.
(The signature of the Agent here acknowledges only the rate given.)

Received $ ..... to apply in prepayment of the charges on the property described above.

..... Agent.
(The signature of the Agent here acknowledges only the amount prepaid.)

If the word "ORDER" is written immediately before or after the name of the party to whose order the property is consigned, the surrender of the Bill of Lading, properly endorsed, shall be required before the delivery of the property at destination, as provided by Section 9 of the Conditions of the Uniform Bill of Lading on the back hereof.

NOT NEGOTIABLE.

SAMPLE BILL OF LADING.

for nearly all shipments, releases the carrier from liability for any loss or damage to the goods that may result from causes beyond the control of the carrier. If the shipper wishes to insure himself against all possibility of loss or damage he is charged a rate 20 per cent

higher, and this charge is purposely made high by the railroad companies in order to induce the shippers to send their goods at their own risk. When the goods reach their destination the consignee presents the bill of lading which he has received by mail, pays whatever freight may be due the railroad company, and receives the goods.

The freight agent receipts for the goods and makes out a way-bill such as is shown on page 125. This way-bill either accompanies the freight or is forwarded by mail. In the latter case the agent makes out a "card way-bill," which is given to the conductor of the freight train by which the car is moved to the destination shown on the card way-bill.

The railroad company keeps account of the shipment by means of the "way-bill." Every shipment of freight is accompanied by a way-bill, stating the number and initials of the car in which the goods are sent, giving the

P. R. R. Car No. 46,014

To Rouses Point

Via { P. V. & C. Jct. Lewistown Jct. / Sunbury, Wilkes Barre and D. & H.

Lading 186 Steel Billets,

Combined Weight of Car and Lading for Engine rating, 42 Net Tons.

G—19—A. P. R.

PENNSYLVANIA RAILROAD,

Phila., Wilm. & Balto. Railroad, West Jersey & Seashore Railroad, And Roads in Inter-Line System.

From Munhall, Pa.

Shipper Henry Poe,

Consignee Order Samuel Koe,

Notify John Foe,

Destination Montreal, Canada,

Via Grand Trunk Railway.

Prepaid | To Collect

Marked Capacity of Car 60,000 lbs.

ESTIMATED WEIGHT.	ACTUAL WEIGHT.
61,100	Gross 84,600 lbs.
WEIGHED AT:	
Derry	Tare 22,900 lbs.
Oct. 1st, 1901	Net 61,700 lbs.

Date Oct. 1st, 1901. W. L. McKee, Agent.

Transferred to Car No.

At Date 190

SAMPLE CARD WAY-BILL.

names of the consignor and consignee, the destination of the goods, a description of the articles and their weight, class, rate, amount of freight prepaid, and amount of freight to be collected. A copy of every way-bill made out by a station-agent must be sent to the company's auditor of freight receipts. If the shipment made is to be through freight, a "joint" or "interline" way-bill of merchandise is used. The specifications on this way-bill are the same as those upon the ordinary way-bill for local freight, but a copy of the bill must be sent to each of the railroads concerned in the shipment and to any freight association of which the carrier may be a member, as well as to the company's auditor of freight receipts. When through freight is billed to a point that may be reached by two or more routes, the agent must specify the route the goods are to take.

The "freight bill" and "notice of arrival" (pages 120 and 121) are used in the delivery of freight at destination. The freight bill is the statement of charges and is receipted by the agent when payment is received. The notice of arrival is the agent's notification to the consignee.

To insure rapidity and regularity in the handling of the freight traffic, the railroad companies find a systematic organization of the service necessary. A detailed record of the daily movement and whereabouts of all the cars in use must be kept. If each road used only its own cars it would be a relatively easy matter to keep this record, but as a matter of fact every road uses "foreign" cars (those belonging to other companies as well as its own), and it has been found necessary to do this in order to expedite the movement of freight between distant points. If every company retained all of its own cars on its own lines, much of the freight shipped long

G—10—A. F. R.

Way-bill No. 4061

Pennsylvania Railroad } and roads in Inter-Line System.

Philadelphia, Wilmington & Baltimore Railroad
West Jersey & Seashore Railroad

October 1st, 1901

Inter-Line Way-bill of Merchandise forwarded from Munhall, Pa., to Rouse's Point, N. Y., Via P., V. & C. Jct., Lewistown Jct., Sunbury, Wilkes-Barre and D. & H.

When billing freight to a point reached via two or more routes, the agent must specify the route in the space provided above

CAR. INITIALS.	CAR. NUMBERS.	SHIPPER.	CONSIGNEE, DESTINATION AND MARKS.	DESCRIPTION OF ARTICLES.	WEIGHT.	No. of Tariff or Rate Order.	CLASS.	RATE.	FREIGHT CHARGES.	ADVANCES.	PREPAID.	TO BE COLLECTED.
						I. C. C.		20½				
P. R. R.	17032	Henry Poe	Order Richard Roe,	56 Steel Beams	46100	2271		15½	71 46			71 46
			Notify John Doe,									
			Montreal, Canada,									
			Via Grand Trunk Ry.									
				Totals of Weight and Money columns	46100				71 46			71 46

The agent at destination must verify figures. He is held responsible for the correctness of the amounts collected.
An agent discovering an error must at once advise any other agent interested; also the Auditor of Freight Receipts.
When freight is shipped at a through rate to or from a point beyond this road the through rate must be stated on the way-bill. The route beyond the point to which the property is billed as above must be shown when final destination may be reached by more than one line.

W. L. McKee, Agent.

A written copy, or the FIRST PRESS COPY of this way-bill, must be sent to the Auditor of Freight Receipts, Pennsylvania Railroad, and copies to representatives of other roads as directed.

SAMPLE INTERLINE WAY-BILL.

distances would have to be rehandled *en route*, and the delays caused thereby would be burdensome to the business world.

At every important station commodities in great variety are received for transportation. In shipping articles from one large station to another, the freight can usually be sorted in such a way as to load each car with goods for a single destination. These "straight" cars are sent right through to their destination, whether that be a point on the line of the company receiving the freight or upon the road of some connecting corporation. Theoretically, this car when unloaded will be reladen and returned to some point on the line of the company owning the car. It is not always possible, however, to find a return load, and the car may be sent off to a point on the road of some third company, and may thence pursue a circuitous route before finally being returned to the company to which it belongs.

It is not always possible even at the large stations to select the freight in such a way as fully to load all cars with goods for a single destination. Oftentimes articles consigned to several places must be placed in the same car. Cars so loaded are called "mixed" cars, and most of the freight shipped from the smaller local stations starts in mixed rather than in straight cars. To reduce the number of mixed cars, and also to lessen delays to which local freight may be subjected, it is customary for the mixed cars sent out from the stations included within different and specified regions to be sent to a junction point or transfer station within the section. At these junction points, transfer freight-houses are provided, and the freight arriving in the mixed cars from different local points is resorted. It is thus possible to make up a large number of straight cars and to reduce the number of cars required for the performance of the

service, and to decrease the expenses incurred in getting the commodities to their various destinations.

At the beginning of the railway business each company endeavored to keep its own cars upon its own lines. That, however, was found impracticable, and to expedite the movement of certain kinds of joint or interline business, so-called fast freight lines came into existence. The public is now familiar with organizations such as the Union Line, the Empire Line, the Merchants' Despatch, the National Despatch, and many others of a similar character. When these fast freight lines were first organized they were usually managed by a corporation distinct from the railroad companies over whose lines the service was performed.

A typical corporation of this kind was the Empire Transportation Company, chartered by the State of Pennsylvania in 1865. This company, which is still in existence, was created to increase the business done over the Philadelphia and Erie Railway, a line connecting Sunbury and Erie, Pa., and forming one of the roads joining New York and Philadelphia with the oil regions in western Pennsylvania and the Great Lakes. As stated by the company, its purpose was "to increase convenience, promptness, and safety in the transfer of property between inland points west on the line of the Philadelphia and Erie Railway and points on the Atlantic slope and seaboard and in the foreign countries east thereof, and to do so in such a manner as should popularize with the shipping public the route formed by that railway and its various connections." Like other corporations of its kind, the Empire Transportation Company solicited freight, provided patrons with cars, charged such rates for its services as competitive conditions allowed, paid the railroad for hauling its cars, and retained the remainder of its income above expenses for distribution

among its stockholders. To increase its business, the Empire Transportation Company built pipe-lines within the oil regions, developed terminal facilities on the seaboard and Great Lakes, and established transportation companies on the Great Lakes and railroad lines extending westward from Pittsburg and Ohio to Chicago, Indianapolis, and other points in the central West.

A traffic organization, such as the Empire Transportation Company developed, is in many ways similar to the companies that were organized for freight and passenger business over the turnpikes and toll-roads in the days before railroad construction began. The companies owning the road-bed were distinct from those performing the service of transportation over the road. Such a form of organization has certain advantages, particularly for securing traffic free to move over different and competing lines. It is an efficient solicitor for business. By owning the cars it relieved the railroad companies of the necessity for providing special lines of business with particular classes of rolling-stock at a time when the railroad companies were comparatively small organizations. With the progress of the consolidation of railroads, however, the fast freight lines of the class typified by the Empire Transportation Company have ceased to be necessary, either to the railroads or to the public. The railroad systems have reached such proportions and their interline relations have been so developed that the railroad companies are able now without the assistance of any intervening corporation to take shipments between most distant places. Moreover, independent fast freight lines gave certain individuals an opportunity to divert to themselves a part of the profits which rightfully belonged to the stockholders of the railroad. Some of the independent fast freight lines were controlled by a limited number of the stockholders of the railroad corporations

over whose roads the fast freight lines did business, and an unduly large part of the receipts for the transportation business went to the fast freight lines. The railroad company received less than its proper share of the total earnings derived from the business done over its lines.

To obviate this objection, and also to provide more efficiently for the management of interline business, the "cooperative" freight lines were established. These cooperative freight lines represented merely a joint arrangement between several connecting railroads. Each of the railroad companies forming the cooperative line assigns to the line a number of cars, usually in proportion to the number of miles of road. A general manager is put in charge of the cooperative line, with agents at the principal terminals to solicit business and employees to report the movement of the line cars. The earnings of the cooperative line and all its expenses are divided *pro rata* among the interested roads. Thus the cooperative freight line is little more than a system for securing an inexpensive and honest administration of interline business.

With the recent development of the railway systems and the perfection of their methods of settling accounts, even the cooperative freight lines have lost most of their usefulness. They continue to be used by the railway companies, although to a less degree. Indeed, they are regarded by most companies as little else than trademarks. The shipping public has become accustomed to consigning its goods to certain fast freight lines, and for that reason many railroad companies find it easier to control competitive business through these fast freight lines. The railroads also find these cooperative lines of assistance to them in the settlement of accounts in connection with their interline business. The Pennsylvania Railroad system, for instance, comprises a large number of

affiliated corporations; and the business passing between the lines east of Pittsburg and those west of that city is necessarily treated as through traffic. The accounts of the through business handled over the Pennsylvania lines are audited by the auditor of the Union Line, who thus in reality acts as the manager of a clearing-house. This Union Line was organized in 1863 as an independent fast freight line between eastern and western points over the lines of the Pennsylvania Railroad system; but in 1873 the Pennsylvania Railroad Company having secured absolute control of all the roads over which the Union Line operated, purchased the Union Line and made it a bureau of the Pennsylvania Railroad Company. Since then the Union Line organization has been that of the cooperative fast freight line, it handles through freight and is entrusted by the Pennsylvania Railroad with the duty of auditing the company's interline business.

As the foregoing paragraph would indicate, there is no railway clearing-house through which the accounts of all the railroads of the United States are settled. In England the railroad companies are all members of a clearing-house, which was chartered by Parliament in 1850. The British Railway Clearing-House collects all the charges and distributes the earnings of the through business. The railroad companies themselves audit only the local business.

If a railway clearing-house for the entire United States were possible, it would be a very desirable institution. It would not only simplify and economize the accounting of railway business, but would also do away, to a large extent, with the opportunity and the incentive for cutting rates and for granting special favors to individual shippers by deviating from schedule rates. It seems, however, that the United States is too large a country and its railroad system too vast and intricate

for the successful operation of a clearing-house for the entire country. It is not impossible that different sections of the United States may eventually each have its own clearing-house. Inasmuch as the railroads of the United States are rapidly being divided territorially and according to ownership into a small number of groups, it may be found advantageous to establish a clearing-house in each one of these territorial sections.

The railroad companies do not furnish all the cars used by shippers. Many large shippers prefer to own their own cars in order that they may be able to ship their goods whenever they desire to do so and in cars especially adapted to the needs of their business. The large meat-packers in Chicago, Omaha, and other centers of the packing-house business own their own cars, and this is also true to some extent of Western fruit-growers, the shippers of petroleum oil, and the manufacturers of certain kinds of heavy machinery. The man who uses his own cars for the shipment of his goods pays the railroad company the ordinary freight rate, unless, as has frequently been the case in the past, he receives a special reduction in the freight charge. The railroad company pays him a fixed amount per mile for the use of the car. In times past this car mileage was as much as a cent a mile. It is now six mills a mile for stock and ordinary cars. For refrigerator-cars the rate is generally one cent a mile in the Middle West and three-fourths of a cent a mile in the East and Far West.

There are certain objections to the system of private cars. They have frequently led to unjustifiable discriminations between the large and small shippers, the man who owns his own cars and ships in large quantities being able to obtain special favors from the railroad company. The tendency on the part of the railroad companies at present is to limit the use of private cars as much as

possible by supplying themselves with all the equipment needed by different classes of shippers, and the use of private cars may eventually be limited to a small number of industries. At the present time, however, the number of private cars in use seems large. Their exact number is not known, but there are about 150,000, or about 8 per cent of the total number of cars owned by the railroad corporations.

When a railroad company makes use of a car belonging to another company, it pays the owning corporation a rental for the use of the car. Until very recently this rental has consisted entirely of "car mileage," and for many years this car-mileage payment amounted to three-fourths of a cent per mile run by the car; later the payment was six-tenths of a cent per car per mile. This form of payment did not work to entire satisfaction, because a company might retain a foreign car a long time without moving that car more than a short distance. The owner of the car under those conditions received a very small rental. Shippers are frequently desirous of using the cars for storage purposes, and the railroad corporation was apt to favor the shipper by granting the concession, particularly if the cars used for storage did not belong to the company making the concession. Accordingly, the leading railroads of the United States in 1902 adopted the *per diem* system of payment for the use of cars. By this system the owner of a foreign car was paid 20 cents per day. When cars became scarce the rate was raised to 25, and temporarily to 50 cents per day to make it to the interest of every railroad to return foreign cars to their owners with as little delay as possible.

It is customary to allow the person to whom goods are shipped a certain length of time—generally forty-eight hours—within which to unload the goods sent to

him. If he does not take his goods out of the car within this time, he is charged "demurrage" of one dollar (sometimes more) per day. Railroad companies dislike to enforce demurrage charges against their patrons, and under the conditions of competition that prevail in business affairs many railroad companies have not collected the demurrage when the cars did not belong to them or when the demand for their own cars was not very urgent. To collect demurrage from some patrons and not from others constitutes an unjust discrimination, the prevention of which is desirable both from the standpoint of the public and from the standpoint of the railroads. The *per diem* method of car rental is causing the railroad corporations to return foreign cars more promptly and is giving the companies a reason for collecting without discrimination the demurrage charges.

REFERENCES FOR FURTHER READING

The American Railway. Paper on Railway Management, by E. P. Alexander, pp. 149–186; also paper on The Freight-Car Service, by Theodore Voorhees, pp. 267–297.

For the classification of freight the following references may be consulted:

1. Report of Industrial Commission, vol. ix, pp. lxxxii–xc and 652–687.
2. Fourth Annual Report of the Interstate Commerce Commission, pp. 197–239.
3. A copy of a freight classification, which may be secured from any railroad company.

For a discussion of fast freight lines consult:

1. Hadley, A. T. Railroad Transportation, pp. 87–90.
2. Report of Industrial Commission, vol. ix, pp. xcv, 613, 724.

For information concerning the railway clearing-house:

1. Findlay, G. The Working and Management of an English Railway. [Contains an account of the British Railway Clearing-House.]
2. Report of Industrial Commission, vol. ix, pp. xcvii, 718–731. [This

is the testimony submitted to the commission by Mr. William Nicholson, manager Central Railway Clearing-House, Buffalo, N. Y.]

The subject of private cars is discussed in:

1. Weld, L. H. D. Private Freight Cars and American Railways, vol. xxxi, No. 1, of Studies in History, Economics, and Public Law, Columbia University, N. Y., 1908.
2. Midgeley, J. W. Private Cars: An Inquiry into their Growth, Development, and Operations. [A series of papers printed in the Railway Age, Chicago, October 10 and 17, November 7 and 21, December 19, 1902, and January 16, 1903.]
3. Eighteenth Annual Report of Interstate Commerce Commission. 1904.

On the *per diem* plan of payment for the use of cars consult:

1. The Railroad Gazette, February 17, 1899, October 11, 1901, and the indexes of the volumes of the Railroad Gazette for the years 1901 and 1902.
2. Weld, L. H. D. Ibid.

CHAPTER X

THE PASSENGER SERVICE

The service of transporting persons differs in several particulars from the freight service. Goods are shipped; men travel of their own volition, controlling, in most instances, the time and direction of their movements. This fundamental distinction necessitates an organization of the freight service different from that required by the passenger business. Freight rates and passenger fares are charges levied for dissimilar services, and to a large extent are determined by different considerations.

One important difference between the two branches of the service is that most freight is moved in car-loads or train-loads, the car or train being started when the car is loaded or the train is made up, while the passenger business is performed by trains that run on fixed schedules. This distinction, however, does not apply in all cases. Some commodities, like milk and fresh fruit, are despatched by trains which run strictly according to schedule, and the collection and distribution of the traffic at the local centers of production or consumption are usually accomplished by "way-freight" trains which have a more or less definite time of arrival and departure. Frequently the "milk" trains and way-freight trains have passenger-coaches attached, and thus perform a mixed service; but the larger share of the freight traffic is handled in trains whose time of departure is arranged

with reference to the volume of goods offered for shipment, while passenger-trains are despatched according to prearranged schedules, whether many, few, or no persons present themselves at the station.

The passenger service, moreover, to a far greater degree than is required in the freight business, must provide for speed, safety, comfort, and convenience. While speed and regularity of service is demanded by the shippers of some classes of commodities, the great demand is for cheap transportation, for low rates, and to meet this demand the railroad companies have constantly striven to reduce the costs of handling and moving goods. On the contrary, in the passenger service railroad officials have striven to give a better service, to increase speed, provide for greater safety, and to minimize the discomforts of travel. Travelers in most countries, and particularly in the United States, seem to prefer a good although expensive service to inferior accommodations at low fares. Whether this is true of all classes of American people is open to question; but there is no doubt that excellence rather than economy has been the goal in the development of the passenger service.

Among the results following from the pursuit of these different aims in the two main branches of the railroad business has been an increase in the average freight-train load, but no gain in the average number of persons per passenger-train. In 1890 the number of tons of paying freight per train averaged 175 tons, in 1906 the average was 344 tons. The number of passengers per train was 41 in 1890, and also in 1900; in 1905 the average was 48; and in 1906, 49. There was an increase in the number of people carried and in the distance traveled by them, but the growing demand for frequency of service, speed, and comfort resulted more in an increase of trains than in a gain in train load.

Another result has been a more rapid decline in freight rates than in passenger fares. The facts regarding rates, fares, and revenue are indicated by the following figures:

	1890.	1895.	1900.	1906.
Revenue per passenger per mile, cents	2.167	2.040	2.003	2.003
Revenue per ton of freight per mile, cents	.941	.839	.729	.748
Revenue per train mile, passenger-trains, dollars	1.086	.978	1.010	1.203
Revenue per train mile, freight-trains, dollars	1.654	1.612	2.000	2.608

From 1890 to 1900 passenger earnings per passenger mile declined 8 per cent, and from 1895 to 1900 2 per cent. During the decade freight earnings per ton mile fell off 23, and from 1895 to 1900 13 per cent. In the freight service the decrease in rates was more than offset by the introduction of more economical methods of conducting the business, so that there was a large gain in the earnings per mile run by freight-trains; but in the passenger service that was not possible, and the train mile revenue fell off slightly. The figures for 1900 and 1906 reflect the influence of the highly prosperous times then prevailing, and show an arrest in the downward tendency of rates and fares, but it is not probable that railroad charges will rise indefinitely. Since 1901 passenger fares have risen. Freight revenue per ton-mile was lower in 1906, but higher in 1907, than in 1901. The future tendency of rates will probably be upward.

Another difference between the freight and passenger services arises from the fact that freight has to be loaded and unloaded at terminals, and yards and depots have to be provided for storing cars and goods. The terminal costs in the freight service—labor, yardage, and storage —constitute a larger share of the total expenses than

is the case in the passenger branch of the business. In the large cities, passenger stations are large structures located where real estate is valuable, but they cost less than do the facilities for handling freight, and passengers not only board and leave the trains without assistance, but do so promptly upon the arrival of the train, so that the railroad company is obliged to provide neither extensive yardage for the coaches nor housing accommodations for the traveling public, except for the brief time they must wait for trains.

Another fact affecting the cost of the service, the utilization of cars, and the methods of conducting the business, is that passenger travel is practically the same in each direction. People who leave home, return to their homes; but commodities are shipped from the places of production to the localities where they are to be used or consumed; and while every one who produces is also a consumer, those who supply the world with foods and raw materials dispose of much more tonnage than they purchase. In the United States the freight from the Western and Southern States to the seaboard and to the manufacturing centers is much heavier than that toward the interior of the country. If freight traffic were equal in each direction, the average train-load would be heavier and the costs of transportation would be less. In spite of the equilibrium of travel to and fro, the average passenger-train carries only 49 persons, or about three tons of paying load, so strong are the forces compelling frequency, speed, and luxury in the service. If travel, like the movement of commodities, were mainly in one direction, the coaches would contain fewer passengers on an average than they now do, and the fares would need to be higher than under existing conditions.

The number of passenger trips taken on American railroads in 1900 was 576,865,230, and in 1906 797,946,-

116. The greatest number reported for any previous year was for 1893, when the Columbian Exposition at Chicago caused the figures for that year to reach 593,560,612. The aggregate length of the trips taken in 1906 was over 25,000,000,000 miles, the average journey per passenger or the average length of a trip being 31.5 miles. The increase in speed of trains and in the comforts of travel is being accompanied by a greater amount of long-distance travel, the average trip having lengthened over 7 miles since 1890.

The revenue derived directly from the passenger service was $323,715,639 in 1900, and $510,032,583 in 1906. The income from the carriage of mail and express, and from other earnings attributable to the passenger service, was $74,300,000 in 1900 and $109,696,620 in 1906. From the operation of passenger-trains about one-fourth of the total income of the railroad companies is received. In New England the passenger revenues comprise a much larger share of the total, four-ninths of the earnings from operation being derived from the passenger-trains. In general, the passenger receipts as compared with those from freight are relatively greater the more thickly the region served by the railroads is settled; but such a district as that occupied by the Rocky Mountain and Pacific coast States of the United States is an exception to the general rule. That part of the United States ranks next to New England as regards the ratio of passenger revenue to total receipts from railroad traffic.

The foregoing figures show that the people of the United States travel frequently; but a comparison of our country with the European countries having the most highly developed means of transportation indicates a greater use of the railroads for travel by some foreign people than by Americans. Although there is a far

greater mileage of railroad in the United States than in any other country, the network of lines is spread over a vast extent of territory, and in a large part of the country serves a scattered and sparse population; while in the United Kingdom nearly half as many people as there are in the entire United States dwell within an area the size of three American States of medium proportions. Long distances deter people from traveling for pleasure, and induce men, when possible, to do business by mail and telegraph. The conditions favoring travel are a dense population living mainly in cities and having an average income large enough to make travel possible.

The people of the United Kingdom take nearly twice as many trips as Americans do, although there are nearly twice as many Americans. Dr. Weyl states that in 1897–8 the average number of trips per year per person taken by the Briton was about 27, while the American's average was about 7.5. In the number of passenger trips taken yearly, the rank of the United States among other countries was approximately as follows: The United Kingdom, 27; Belgium, 17; Switzerland, 15; Germany, 12; France, 10; and the United States, 7.5. The significance of these figures is modified by the greater average length of the trip taken by the American, who travels a few more miles each year than does the inhabitant of any other country except the United Kingdom, although the difference between Germany, France, and the United States in this regard is small. The passenger traffic on European railroads is much denser than on those in the United States. An equal mileage of road accommodates a much greater traffic in Europe than in the United States. This is shown by dividing the total number of miles traveled by all passengers (the "passenger miles") by the miles of railroad. Such a calculation shows the miles traveled per mile of railroad to be about 400,000

in the United Kingdom, 343,000 in Germany, 283,000 in France, and 72,000 in the United States [1] in 1898.

In all countries, the United States included, passenger accommodations of different degrees of excellence are provided by the railroads, the charge for the best class of service being more than for the lower classes. In European countries, from three to five grades or classes of service are offered. In the United Kingdom and most of the Continental countries there are three classes—first, second, and third; but in Germany there are four classes, besides special accommodations for the military, which may be considered a fifth class. In the military and fourth classes the coaches are but little better than box freight-cars, sometimes with and sometimes without benches. The third-class car, or compartment, contains comfortable seats without upholstery, and until recently the third-class had no toilet accommodations. In the second-class the passenger is given more room, he has an upholstered seat, and his compartment has an adjoining toilet. The first-class compartment has more elegant fittings and appointments than the second-class, but the comforts are practically the same.

The traveling public in Europe desires this classification for two reasons: one economic, and the other purely social. The great majority of the people wish to travel inexpensively, preferring economy to luxury, and their demand for a cheap service is met by the railroads in the third and fourth classes, and in the slow trains upon which lower fares are charged than on the fast trains. The minority of the passengers are able to pay

[1] The facts in this paragraph are taken from calculations made by Walter E. Weyl, Ph. D. The table on page 142, prepared by him, was submitted to the Industrial Commission and is contained in the Commission's report, vol. iv, p. 758. Further data on this subject may be found in Dr. Weyl's work on The Passenger Traffic of Railways. The facts for the United States in 1906 are given in the table.

Country.	Year.	Number of passengers (in millions).	Number of passenger miles (in millions).	Number of passengers per head of population.[1]	Number of passenger miles per head of population.[1]	Average length of trip in miles.	Receipts per passenger.	Receipts per passenger per mile.	Number of passengers per train.	Revenue per passenger train mile.[2]	Passenger density. (Passenger miles divided by miles of railroad.)	Freight density. (Ton miles divided by miles of railroad. Net tons.)
							Cents.	Cents.		Cents.		
Germany	1897–'98	692.5	10,058	[1]13.2	192	14.5	15.7	1.08	71	77	342,000	661,000
United Kingdom	1897	[3]1,030.4	.....	[3]27.0	.....	.....	17.4	.....	.....	.....	.....	.....
France	1897	396.7	7,227	10.3	188	18.3	27.8	1.17	.....	.....	283,000	373,000
India [4]	1897	151.2	5,931	0.5	20	39.2	[5]11.4 [6]9.0	[5].27 [6].25	[5]189 [6]215	[5]62 [6]60	289,000	234,000
United States	1898	501.2	13,380	8.0	214	26.7	52.6	1.97	39	97	72,000	618,000
United States	1906	797.9	25,167	9.	296	31.5	63.9	2.003	49	120	114,500	982,000

[1] On the basis of the last preceding census.

[2] Including passenger fares alone, and not including receipts from mail, express, or other revenues often associated with passenger receipts.

[3] Not including season-ticket travel.

[4] Rupee taken at 21 cents. See United States Consular Reports. According to the value of the rupee the receipts of Indian railways in gold would be 50 per cent greater than the figures here given.

[5] Broad-gage railways.

[6] Meter-gage railways.

high fares for more elegant accommodations and for the social distinction attaching to traveling in a class above that taken by most people. In countries where social divisions are sharply drawn, the larger fares exacted for the second and first classes as compared with the third are paid mainly because the first and second classes are taken by only a few people.

In countries where there are only three classes, about nine-tenths of the passengers ride third-class, and where there are four classes somewhat more than nine-tenths choose the two lower classes. The first-class is patronized less than any other. The division of passengers among the several classes in nine representative foreign countries is shown by the following table, prepared by Dr. Walter E. Weyl for the Industrial Commission:

Divisions of Passenger Travel in Various Classes in Various Countries

Country.	Year.	Per cent of all passengers in class.					
		1.	2.	3.	4.	Military class.	Total.
Germany	1898	0.37	9.5	60.8	27.63	1.7	100
Switzerland	1897	.94	14.47	84.59	.....	.....	100
Belgium (state)	1897	3.07	10.19	86.74	.....	.....	100
India:							
Broad-gage	1897	.5	2.8	4.8	91.9	.....	100
Meter-gage	1897	.3	1.4	1	97.3	.....	100
Norway	1898	.1	7.3	92.6	.....	.....	100
Sweden (state)	1897	.3	13.2	84.8	.....	1.7	100
Denmark	1898	.6	12.7	86.7	.....	.....	100
United Kingdom	1898	3.1	6.2	90.7	.....	.....	100
Italy	1892	4	24.3	71.7	.....	.....	100

In the United States, passengers do not divide themselves into classes to the extent that is customary in most foreign countries, but the railroads of our country furnish different grades of service corresponding in a gen-

eral way to the classes found on foreign roads. Most of the travel in America is on first-class tickets; but most companies sell second-class tickets; and on the routes over which travel justifies them, excursion and immigrant trains are run which provide inferior accommodations and transportation at rates cheaper than those charged second-class passengers. Above the first-class accommodations are those furnished in the parlor-cars and sleeping-cars. Thus the passenger service in this country comprises three regular grades: the "Pullman" service, as the parlor- and sleeping-car accommodations are most frequently called, the first-class, and the second-class, and from time to time includes a fourth grade, the cheap excursion and immigrant trains.

The patronage of the "extra-fare" cars and trains is increasing, and on the main routes of long-distance travel the best trains consist entirely of parlor-, sleeping-, and dining-cars. Over these routes and over many of the shorter ones the principal trains carry both parlor and day coaches—that is, regularly provide two classes of service. The holder of the second-class ticket is usually required to sit in the smoking-car, but occasionally separate accommodations are provided for him. Second-class passenger traffic is not stimulated in the United States, and the volume of that class of travel is probably declining. This may be expected to continue until the railroads change their policy and run second-class trains and cars as a regular part of their service. Cheap excursion trains are on the increase. Year by year the wage-earners are becoming more able to travel, and the inducements to do so are multiplying. The excursion business is profitable to the railroad companies, and will doubtless be developed much beyond its present scope.

Freight and passengers are classified in a different way and for unlike purposes, but in some particulars the rea-

son for the classification is the same. Differences in the cost of the service and in the ability of the article to pay charges determine the class to which a commodity is assigned and the rate which it must bear; likewise the fares collected for each of the several grades or classes of passenger service are fixed with reference to differences in the costs of the service and in the ability and willingness of various classes of travelers to pay. In the passenger, as well as the freight business, the range of charges as between the higher and lower classes is much greater than the difference in the costs of service.

Most American railroad companies, unlike those in foreign countries, place the sleeping-, parlor-, and dining-car services in charge of a separate company. The Pullman Palace-Car Company, of Chicago, from the beginning of this service in the years 1865–66, has owned and operated most of the cars in use. For many years the Wagner Palace-Car Company, of Buffalo, built and managed from one-fourth to one-third of the sleeping-, parlor-, and dining-cars, the Vanderbilt interests controlling the company. In 1899 the two companies consolidated under the name of the Pullman Company, and at the present time that company controls all these extra-fare cars excepting the relatively small number operated by the railroad companies. The Chicago, Milwaukee and St. Paul, the Canadian Pacific, the Great Northern, the New York, New Haven and Hartford systems, and a few other companies, now run their own cars exclusively.

The railroads pay the Pullman Company mileage (about one cent per car mile run) for the use of the coaches, and the Pullman Company, in addition to this revenue from mileage, receives the extra fares paid by the passengers for the privilege of riding in the parlor- or sleeping-car. The railroad company receives the regular fares paid for the first-class tickets, the Pullman accom-

modations being obtainable only by those having first-class tickets. On some especially fast trains the railroads charge more than the usual first-class fare, to cover the additional expense of running the trains at a high speed. The parlor- and sleeping-coaches are much heavier than the ordinary first-class day coach, and have accommodations for fewer people; hence the profits received by the railroads from the parlor- and sleeping-car traffic are really smaller than those obtained from the day coach service. Some one has said that "the man who sits up all night in the day coach helps pay for the fare of the man who rides in the Pullman car." This, however, is not strictly accurate, because the parlor- and sleeping-car service is probably not often conducted at a loss.

The railroad companies have found it to their advantage to rent the parlor- and sleeping-coaches instead of owning them, because the Pullman Company, having control of a great number of cars, is able to supply the railroad with just the number of cars required. The number of Pullman cars required by a railroad company varies with the volume of travel, which is greater in some seasons of the year than in others, and which may temporarily be largely increased by some convention, exposition, or other extraordinary event. When one railroad company or one section of the country has a large demand for coaches, some other company or section will probably not need more than the usual quota, and the Pullman Company is thus able to distribute the cars economically according to the needs of the service. If each railroad company owned coaches enough to supply its needs when the travel over its lines was heaviest, some companies would have on hand a large number of idle coaches much of the time. This condition, however, is being changed by the railroad consolidations and the development of systems serving large sections of the country. A

railroad system such as the Southern, the Pennsylvania, the Vanderbilt, or the Morgan-Hill lines, operates over such a wide stretch of country that the volume of travel on its system as a whole must vary within a small enough range to enable the company to employ its parlor- and sleeping- and dining-car equipment economically. No such a company as the Pullman could absorb practically all the field were it to start under the conditions now prevailing, but having acquired the business as it developed, the Pullman Company will doubtless continue for some time to come to perform the service it is now rendering. Eventually, however, the large railroad companies will probably own and operate the sleeping-, dining-, and parlor-cars used on their several lines.

The agents at all stations are supplied with both local tickets good between stations on the line of the selling company and with through or interline tickets valid on connecting lines. The arrangements for traveling long distances over the roads of several companies are as complete as are the facilities for shipping freight on through bills of lading. By ticketing through to destination, the passenger is privileged to check his baggage to the same point, and thus to lessen the inconveniences of the journey. The baggage arrangements in the United States are superior to those in most foreign countries, and the American railroads are especially liberal in the weight of baggage which a passenger may take without extra charge. In the United Kingdom the passenger receives no baggage check, and is obliged to identify and claim his "luggage" at the end of the trip. On the Continent of Europe the passenger receives a check for his baggage, but the weight of baggage which he may check without extra payment is usually limited to 56 pounds, and in some countries nothing but hand baggage is exempted from charges. In the United States

the railroads permit the passenger to carry as much hand luggage as he wishes, and will check 150 pounds without charge. This extra baggage service should be taken into consideration in comparing passenger fares in the United States with those abroad.

In most passenger-trains there are more seats vacant than occupied, the average number of passengers per train in the United States being only 49. Over many routes an increase of 50 per cent in the number of persons carried would add little or nothing to the expenses of operation. Under these conditions, profits rise very rapidly with even a moderate increase in business, and consequently the railroad company always has a strong incentive to enlarge the patronage of its road.

Many means are employed to accomplish this. The companies advertise in the daily, weekly, and monthly journals, and place descriptive literature in conspicuous places. Ticket offices are located in the most central sections of the large cities; agents are employed to solicit the patronage, and excursions for many purposes and to many places—the seashore, the mountains, large cities, to political and religious conventions, to inaugurations, to the Western States, to gold-mines, etc.—are organized by the railroads. Some official in the passenger department has general charge of the excursion business. Among other devices to increase travel are the "personally conducted" tours which many companies are now successfully organizing.

The "resort" traffic and suburban traffic, or what is frequently called the commutation business, is zealously stimulated by reduction in fares and by offering an attractive service. With the growth of wealth in the United States and the increase in the number of those who can afford recreation the summer travel between the cities and the seashore and mountain resorts is rapidly

expanding. Likewise the change from city to suburban residence for a part or all the year is taking place with accelerating rapidity as the inconvenience, discomfort, and expense of getting to and from the city are being lessened. In stimulating suburban residence the trolley has been quite as influential as the steam-railroads, and by its competition has in some instances compelled the railroad companies to make their service more attractive by reducing fares and offering better accommodations. The trolleys have in some cases taken so much of the short-distance suburban traffic away from the steam-lines as to cause them to curtail or abandon part of the service previously performed. However, the result of the trolley upon the growth of the suburbs has often been to cause such an increase in population as to enlarge ultimately the traffic of the railroads as well as the trolley-lines.

There are two general methods of inducing people to use the railroads more frequently: one is the reduction of fares, the other is the improvement of the service. The American railroads, generally speaking, have been more inclined to follow the latter plan. They have acted upon the theory that they were serving a people having a relatively high average income and willing to pay liberally for comfort, speed, and luxury when traveling; accordingly, the rivalry of competing companies has led to the introduction of a more expensive and more luxurious service rather than a cheaper one. As was stated above, fares have declined very slowly as compared with rates. A reduction of fares to stimulate traffic has been made in many cases, but greater dependence has been placed upon speed and comfort than upon cheap fares to attract travel.

It is possible that a less expensive and less comfortable service offered at rates considerably lower than those prevailing might result in much more travel. There are

some students of the subject who think that there would be a large demand for a cheaper service in this country, and who believe that the experience of the foreign railroads, whose inferior but inexpensive service has caused the poor people to travel extensively, would be repeated in this country if the American railroads were to offer the masses of people, whose income is small and to whom speed and luxury are not of prime consequence, an opportunity to travel for fares much lower than those now charged for first-class tickets.

In considering methods for increasing the use of the railroads for travel, the fact should be kept in mind that "the greatest elasticity of demand" exists among those to whom expensive travel is impossible. The desire for travel is universal, and if the costs of traveling can be brought within the means of all with the possible exception of the very poorest classes of society, the number of journeys taken can be greatly increased. The lowering of charges both in this country and abroad indicates that passenger traffic tends to increase more than proportionately with reductions in fares.

It does not necessarily follow that the revenues derived from the larger traffic at lower fares will be more profitable to the railroads, but there are reasons for believing that the addition to the present passenger business of American railroads of a large volume of traffic taken at low fares would add to the net profits of the companies. With an average train-load of only 49, it can hardly be doubted that expenses will be enhanced but slightly by additional business. The railroad business is one of "increasing returns" under practically all conditions—a business in which profits rise more than proportionately with an increase in the business done—and the passenger service as at present conducted is one in which the law of increasing returns would operate very

strongly. There is, moreover, the practical effect of low fares in other countries to indicate what would probably result from the introduction of a cheaper service at lower fares in this country.

Dr. Weyl thinks that "if there were introduced a cheap, comfortable, second-class service which differed from the first-class chiefly (though not wholly) in name and price, there would be many new passengers who at present forego traveling, while a very large number would travel first-class for the distinction of so doing."[1] This is equivalent to saying that American passengers would do what Europeans do, and, indeed, there seems no valid reason for thinking otherwise. The development of a second-class, as here suggested, would in reality mean three classes: the Pullman service and the first and second classes.

It is, however, not probable that American railroads will soon introduce a special second-class service as a regular feature of the passenger traffic. There are other methods by which travel can be made attractive, and as the competition among the several companies is brought under greater control, they may be expected to try various plans. The volume of travel in the future will be enlarged somewhat, as it has been in the past, by increasing the speed of trains. The results that will follow from accelerating the speed of the trains which now run at 50 miles or more an hour will not be important, but the effect of raising the average speed of passenger-trains even 10 miles an hour would probably be considerable. The improvements being made in road-bed, cars, locomotives, and safety appliances are certain to raise the average rate of travel much above what prevails to-day.

Unquestionably the railroad companies have been

[1] The Passenger Traffic of Railways, p. 21.

deterred from selling low-rate tickets to stimulate special and unusual travel, because ticket-brokers, or "scalpers," are able to secure such tickets and sell them at "cut rates" to persons who would otherwise purchase the regular full-rate tickets. The brokers in many cities do a flourishing business buying and selling mileage books, excursion tickets of various classes, the unused portion of through and return tickets, and all other kinds of tickets which the broker can sell for less than the full fare and yet derive a profitable commission.

The business of the ticket-scalpers is objectionable not only because it prevents the railroad company from controlling the use made of the tickets sold, but also for the reason that many dishonest practises are resorted to in selling and using "cut-rate" tickets. Many of the special tickets issued by railroad companies—mileage books, for instance—are sold to be used only by the original buyer, who must sign his name on the last page of the ticket-book and on the portions of the ticket collected by the train conductors from time to time. If any other person uses the ticket, he travels under a false name and probably has to forge another's signature.

The railroads themselves have not been without fault in the ticket-scalping business, because in times past they have frequently connived with the brokers by letting them have blocks of tickets to be sold at cut rates. The purpose of the companies doing this was to secure traffic that would otherwise have gone to rival lines, and the practise was one of the results of unregulated competition. Not all companies adopted such methods of attracting business, and at the present time there probably are no roads in league with the brokers, although it is probable that some of the tickets now sold by the brokers are bought directly from the companies.

The railway companies by cooperative action have

restricted the ticket-brokerage business within much narrower limits than it formerly had; but the highly prosperous times since 1898 have made cooperation and the regulation of competition comparatively easy for the railroads; when business conditions become depressed again, and the struggle to secure traffic becomes more intense, the companies may not be able to prevent a resort to some of the objectionable practises of the past. Laws by the United States and by all the States limiting the sale of tickets to the railroad companies and their authorized agents are desired by the railroad officials, and such legislation has been enacted by some States; but the law has been declared unconstitutional in two of these States —New York and Texas. The United States Supreme Court has not passed upon the validity of such legislation; but it is probable that an effective law could be drawn in terms that would be constitutional.

All laws prohibiting the sale of tickets by unauthorized brokers should contain a clause requiring railroad companies to redeem the unused portions of tickets. Pennsylvania passed such an act in 1863, and several other States also have a similar statute. The enactment and enforcement of such a law would greatly limit the opportunities of the ticket-brokers, but would not entirely destroy their business.

The regulation of the issue of free passes is highly desirable from the standpoint alike of the public and the railroads. The passes are a bad thing for the railroad company, because they cut down its earnings; they are unjust and immoral from the public point of view—unjust because they improperly discriminate between individuals, immoral because they are issued to legislators, judges, and other public officials charged with the enactment and enforcement of laws controlling the relations of the railroads and the public.

Twenty years since, passes were issued in great numbers and to many classes of persons, to practically any one who might be of service to the railroad company; but of late the railroads have been making a united effort to restrict the grant of free transportation. In the past it has been customary for each company to pass any railroad employee, and frequently his family, over its lines—those men connected with other companies as well as their own force—but at the present time the privilege is granted only to the company's own men. The issue of passes to public officials and favored patrons of the road has been considerably restricted by placing the power of granting passes solely in the hands of one or two higher officials of the company. There is, moreover, evidence of a growing moral sense in the public mind against the pass system. Some States, and the United States, act of 1906, have passed laws prohibiting their officials from accepting free transportation, and many men in public office do not need laws to teach them the immorality of accepting favors from corporations; but the public conscience does not yet condemn the pass system strongly enough to put an end to it. The restriction of passes to the employees of the company making the grant is certain to become the general practise in time, because the railways, as well as the public, will benefit by the adoption of such a policy.

The accomplishment of such reforms as the stopping of ticket-scalping and the abolition of the issue of objectionable passes is being facilitated by the consolidation of railroads and by their growing ability to cooperate. Under former conditions of unrestrained rivalry between a multitude of struggling companies, some strong and well-established, others struggling, often by questionable methods, for a higher rank among their competitors, it was practically impossible for the railways to work

together in any common cause. That state of affairs is largely past, and fortunately so. It is now possible for the railroad corporations to introduce such changes in business methods as will be for their common good; whether the methods thus adopted shall be in harmony with the public good will depend upon the ethical standards and intelligence of the community in regard to railroad affairs.

In all probability, the future development of the passenger service will be influenced very greatly by the use of electricity instead of steam for motor power. The growth of the electric railway has been most rapid. In 1887 there were 13 short lines, using altogether about 100 cars; twenty years later there were 2,233 miles in Massachusetts alone, that State having as many miles of street-railways as of trunk-line railroads. In the beginning these electric lines were laid only in city streets, but they soon became suburban and interurban roads. They are now sharing with the steam-railroad not a little of the short-distance traffic it formerly monopolized; and when one considers that the development of the electric railway is as yet in its infancy, the prospect is that "in the not very remote future a subsidiary railroad system" with electricity for its motor will be in operation.

The electric railway has certain technical advantages over the steam-railroad, especially for the passenger service. The power is supplied by central plants and can be used in small units to run a single car or in large units to propel a train; moreover, the power taken from the current can be applied to as many axles of the car or train as may be desired. The steam-engine, in order to avoid a waste of power, must haul several coaches, and the result is a very incomplete use of the capacity of the vehicle; but the electric cars can be run singly, at short intervals, and the number of cars can be closely

adjusted to the requirements of the traffic. The electric power is clean, safe, and quiet, and is unquestionably economical for local service in the light freight, express, and passenger service. In the suburban and to a large extent in the interurban traffic, the electric cars are either run over the lines of the connecting street-railways or have such close connections with them as to enable passengers to travel directly without delay between their residences and places of business.

Electric roads are cheaper to build and operate, and their fares are less. Right of way has usually cost but little, although that will change if the electric roads should ever develop into long trunk lines having an exclusive roadway as the steam-railroads now have; the equipment is relatively inexpensive, and terminal and other structures require small outlay. The track, however, is made as heavy and strong as that used by the steam-lines. The electric lines handle local traffic at much lower fares than the steam-roads do; and the rate of profits of capital in the electric-railway business has been much in excess of that derived by the steam-railroad companies.

What will be the future of the competition of electric with steam railways? Dr. Weyl says, "the present street-railways may be indefinitely extended along the public highways; new electrically operated railways may be chartered under general enabling acts, or the present steam-railroads may use electricity either alone or in conjunction with steam-power. But however the development may shape itself, it seems probable that it will be in the direction of the growth of a vast electrically conducted passenger traffic and a radical reduction in passenger fares, both on electric and steam railroads." Electricity may be expected to take the place of steam as the motor power for short-distance traffic, as indeed

it has begun to do in the steam-roads entering New York city and in some other places. Whether electricity will supplant steam in long-distance traffic may depend to some extent on the future development of the storage-battery, which at the present time is too heavy and too expensive for practical use when anything but light work is to be done. The movement of trains electrically between distant termini by means of power generated in central plants and transmitted along the line will hardly be practicable in very many cases; the trains used in this traffic must take their power with them.

It would be indeed rash to predict what the future development of the electric motor will be. The accomplishments of electrical engineers, with their present incomplete knowledge of the force with which they are dealing, lead the world to expect yet greater achievements. The possibilities of electricity are doubtless greater than those of steam, and the ultimate use of the electric motor in all branches of the transportation service seems a rational expectation.

REFERENCES FOR FURTHER READING

Weyl, W. E. The Passenger Traffic of Railways. [A volume published by the University of Pennsylvania, Philadelphia, 1901. The book contains much historical and statistical information.]

The American Railway. Paper by Horace Porter on Railway Passenger Travel, pp. 228–266.

Prout, H. G. Railroad Travel in England and America. Scribner's Magazine, October and November, 1894.

Report of the Industrial Commission, vol. iv, pp. 758, 759.

"Street and Electric Railways, 1902." Special Report, Bureau of the Census, Washington, D. C.

CHAPTER XI

THE EXPRESS SERVICE OF THE RAILWAYS

The express business is here studied as a part of the transportation service performed by the railroads. Not all domestic express matter is transmitted by rail, but the railroads have now spread so generally and so thickly over most sections of our country that the saddle-horse, the stage, and the steamboat have come to be little used by the express companies. In the service between the United States and all foreign countries, except Canada and Mexico, the steamship is necessarily the carrier employed. There are but few of the important phases of the business performed by the express companies of the United States not manifest when the subject is viewed from the standpoint taken in this study.

In general, express traffic consists of the commodities, other than mail-matter and personal baggage, transported on passenger-trains. This statement does not cover quite all the business, because some express goods are sent by fast trains carrying no passengers, but that is exceptional at the present time. Among the articles most frequently carried by express are parcels of commodities of light weight and high value, valuable papers and documents, books, magazines, and other printed matter (usually the printed matter sent consists of packages weighing over four pounds), paper money, coins and precious stones, and perishable products requiring more rapid transportation and prompter delivery than the railroad

companies can offer in their freight service. In addition to the transportation services performed by the express companies, they sell to travelers "express money-orders," payable at any of their foreign offices, and they sometimes collect accounts and execute papers.

We are here concerned with the carrying business of the express companies. In forwarding parcels some of their traffic is like that sent by mail. In the United States the post-office accepts for transportation within the country only packages weighing 4 pounds or less, and leaves the carriage of the heavier ones to the express companies. In this the practise of the United States differs from that of several foreign countries in which packages weighing 11 pounds are accepted for transmission through the mails. In countries having a "parcels post" for handling packages of this size, the express business is handled either as mail-matter or as fast freight.

Strictly speaking, the express business is a part of the freight service, both consisting of the movement of commodities as contrasted with the carriage of persons, which is the passenger service, nor is there any sharp line of distinction between the traffic handled by the express companies and by the railroads as fast freight. The express company will accept practically any commodity, and the shipper, whatever may be the nature of the goods he is forwarding, has the option of sending his articles as freight on trains running about 15 miles an hour—the consignee to call at the depot for the goods—or the shipper, by paying about four times the ordinary freight rate, may have an express company call at his house or place of business for the packages to be shipped, despatch them on a train making 30 to 50 miles an hour, and deliver them at the street address of the person to whom the articles are sent.

In actual practise, the competition between the express and freight services is neither so general nor so keen as the statement just made might indicate, partly because the relations of the express and railroad companies are regulated by contract, and partly because the railroad company may frequently receive more for carrying goods for the express company than would be obtained as freight charges paid by the shipper of the commodities—i. e., the railroad company's share of the express charges may be greater than the total charges would be if the goods were carried as freight. In the past, railroad companies have sometimes favored the shipment of such bulky commodities as oysters, milk, and fresh fruit by express, but with the recent development of the fast freight service the tendency is to restrict the express traffic to parcels.

In most countries the express traffic not carried through the mails is handled by the railroad companies, but in the United States most of the railroad corporations turn over to a distinct company the business of collecting, despatching, and delivering express packages. The railroad companies provide and haul the cars. A few railroad companies have developed a special organization of their own for the performance of the express service. The Baltimore and Ohio for many years had its own express company, but it has sold out the business to the United States Express Company. At the present time the express traffic over the Northern Pacific lines is managed by the Northern Express, that over the Great Northern system by the Great Northern Express, and that over the Denver and Rio Grande roads by a company entitled the Globe. These organizations for the handling of express matter over the lines composing a large railroad system are similar to the cooperative fast freight lines.

The express companies independent of the railroads have both the partnership and the corporate forms of organization, the limited partnership being usual. The business having been developed from small beginnings by a limited number of enterprising individuals, the men who built up the traffic preferred to control the organization, and they found the partnership the best means for doing this. There have been many consolidations whereby the express business has been concentrated principally in the control of a half-dozen large companies.

The six large express companies in the United States are the Adams, the American, the Pacific, the Southern, the United States, and the Wells, Fargo & Co. In addition to these companies and the organizations connected with single systems of railroads there are the National, a company of medium proportions, and the New York and Boston Despatch, the West Jersey, and the Western, each doing a small business. There are several Canadian and Mexican express companies which do more or less business over American railroads.

During the first decade of the history of the railroads of the United States there was no special organization for handling express matter. Those wishing to send valuable packages quickly to their destination usually entrusted them to the conductors or baggage agents, who left them with the station agents to deliver to the consignee when he called for them. About 1839, William Harnden, perceiving the need for a systematic and responsible service, began receiving parcels for transmission by responsible agents between New York and Boston. He arranged with the railroad and steamship lines to carry his messengers and their packages, and soon organized a service between New York and Philadelphia, and between the United States and Europe. By 1850 his business had been extended into the Southern United States.

Harnden's business seems to have been profitable from the start, for in 1840 Alvin Adams began to compete for the New York and New England business. Harnden found the European business so attractive that he emphasized that more than the domestic service, and thus gave Adams a favorable opportunity to enlarge his field of operations. In 1854 Adams & Co., Harnden & Co., and two other smaller firms, Thompson & Co. and Kinsley & Co., consolidated and became the Adams Express Company.

The firms that united to form the Adams Express Company antedated any others in the service, but the American Express Company was established in 1850 by the union of the Livingston Company, founded in 1841, and the Wells Company, organized in 1845. The American Express Company devoted itself especially to the business between New York and the West, and now operates over more lines of railroad than any other company does. Wells, Fargo & Co. started in 1852, and took hold of the California business seventeen years before the first railroad to the Pacific was completed, and at a time when the stage-coach and ponies were used to transport packages, and when the express-agents had many a thrilling episode with Indians and highwaymen. Bandits seem to derive peculiar satisfaction from "holding up" the carriers of express and mails, the train robbers continuing to follow their nefarious business even at the present time. The United States Express Company was organized in 1854 and took the Central West for its special field. The Southern Express Company was incorporated in 1886. Its service is mainly in the section south of the Potomac and east of the Mississippi. It is controlled by the Adams. The Pacific Express Company began operations in 1879, choosing the southwestern section of the United States for its special field. The

National Express Company, although one of the smaller companies, was founded in 1853, and two years later consolidated with two companies doing business northward from New York. The mileage over which the National operates is increasing, its principal contracts being with railroads controlled by the Vanderbilt interests.

The express service in the United States is centralized in the control of a few large companies which have in a general way divided the field among themselves. No company has exclusive possession of the territory over which its service extends, but there is and has been a harmony of action among the companies, and an absence of the violent competition that formerly characterized interrailway relations.

In its contract with the railroad corporation the express company secures a monopoly of the express business over the railroad lines included within the agreement. As indicated by the following section of an actual contract, it is customary for "the express companies to agree to handle, load, and unload all express matter, and to assume all risks of loss and damage thereto except for such loss or damage as may result from the gross carelessness or gross negligence of the railroad company, its agents or servants, and to pay to the railroad company for the rights, privileges, and services hereby provided, 40 per cent of the gross receipts arising in any way from any property or matter carried upon or over the lines owned, leased, or operated by the railroad company, without deduction of any expenses of any kind whatever."

Sometimes the railroad corporation obtains more than 40 per cent of the total receipts of the express company, as high as 60 per cent being paid in some instances, the percentage depending upon the character and amount of the express traffic. The receipts obtained by the ex-

press company for the transmission of money, bullion, and jewelry are frequently exempted from the payments to the railroads. It is also usual to stipulate in the agreement that the express company may charge such rates as it may determine upon, but that the minimum express rates must be a stipulated per cent (varying from 50 to 150 per cent) above the rates which the goods would pay were they shipped by freight.

The express rates average from three to four times what the freight charges would be. In fixing their charges, the express companies take into consideration the value and character of the goods, the quantity shipped, the distance they are to go, the speed at which they are to be carried, and the kind of service rendered by the company in the collection and distribution of the articles. As in the case of freight, the most usual basis of charge is weight and distance—with a minimum charge of about 25 cents for a package. If the article sent is valued at over $50, an additional charge is made as an insurance to cover the extra risk assumed in performing the service. The charges for transmitting money are made upon the amount declared to be in the package. The customary unit upon which the charge is made is $1,000, the rate varying somewhat, though but slightly, with the distance. The charge for carrying gold is 25 per cent, and for silver 50 per cent greater than for paper currency, because of the greater weight and bulk of the coin.

The organization by which the express company carries on its service is not a complicated one. Subject to the members of the firm or the general officers of the corporation is a general superintendent exercising general administrative authority over the entire service. Under him are division superintendents corresponding to the traffic managers in the railroad business. Station

agents receive and deliver goods, and messengers have charge of the articles while in transit. A limited number of route agents are employed to examine the stations or agencies and to report to the superintendent.

The person consigning goods to an express company receives a receipt containing a description of the goods and a statement of their declared value. The express charges may be paid on receipt of the goods by the company (P. O. R.) or on delivery of the articles to the consignee (collect). The goods shipped are accompanied by a way-bill similar to a freight way-bill, stating the weight and value of each package, the consignor and consignee, destination, and charges, prepaid or unpaid. The messengers account to the station-agents, and the agents to the auditor's office.

There are no available statistics of the volume of express business done annually, because, unlike the railroad corporations, the express companies prior to 1907 made no yearly reports to the United States Government. The only earlier figures are those of the United States decennial censuses; hereafter statistics will be gathered and published annually by the Interstate Commerce Commission. According to the census of 1890, the total mileage of railways, waterways, and highways covered by the service of the express companies was 174,534 miles, of which total 92.6 per cent was under the control of the six large companies—the American, Adams, United States, Pacific, Southern, and Wells, Fargo & Co. During the year ending June 30, 1890, there were transmitted 98,118,430 packages, weighing 1,646,273 tons. The way-bills of money shipments numbered 17,258,-682, and the sales of express money-orders numbered 4,598,567.

Some persons think it would be to the interest of the public were the United States Government to enlarge its

mail service so as to cover most of the traffic now handled by the express companies. This policy has been adopted in the United Kingdom and in other countries by means of the "parcels post," which is said to be a success. The main argument advanced in favor of enlarging the package business in the United States postal service is that the United States could conduct the service more economically than the express companies can, and hence at lower rates than now prevail. It is claimed that inasmuch as the Government has its post-offices in every nook and corner of the country, and its "branch offices" or "stations" in all sections of the large cities, and has an elaborate collecting and distributing service, which is now being rapidly extended even into the rural districts, the Government would need only to enlarge its present service, which it could do with a relatively small increase of expenses, in order to include all the traffic in small packages now handled by the express companies. The express companies, with their many offices and cars, their army of employees, and their elaborate arrangements for collecting, transmitting, and delivering packages, are to a considerable extent a duplication of the mechanism by which the postal service is performed, and hence are said to be a social burden, because more capital and labor are employed than would be required if all the work were done by the Government. It is also argued that the Government could do the package-express business better than private companies can, because the Government has many more offices, branch offices, and stations than there are express offices. The post-offices serve many more people than the express companies do or ever can.

Those who oppose the extension of the package service of the post-office doubt the wisdom of the Government's undertaking any work that can be performed satis-

factorily by individuals. They feel that the functions and burdens which the state must necessarily take upon itself are certain to multiply as rapidly as the ability and honesty of the Government increase. Many people think that other changes in our postal service, especially the extension of the rural free delivery, should have precedence over the establishment of a parcels post such as foreign countries have.

Whether or not the time has come for increasing the competition of the mail with the express business, there is little doubt that the post-office could handle packages up to 10 or 15 pounds in weight without loss at rates much lower than those now charged by the express companies. If the Government's competition were extended, the rates charged by the private companies would probably be lowered. Moreover, it is probable that the rates now charged are higher than are necessary to secure fair profits on the capital invested. The express business, while not a complete monopoly, is one in which competition is confined to narrow limits. Most express traffic is free from competition either by the post-office or by the freight service of the railroads, and the rivalry among the companies themselves is nearly eliminated by the consolidation of the business in the hands of a few large companies, each having a more or less definite section of the country, and by the agreements which the companies can readily make with each other regarding rates.

A transfer of the express traffic partially or wholly from the private companies to the Government would not greatly affect the service of hauling the cars now performed by the railroads in connection with the express business. By combining the mail and express traffic, a somewhat smaller number of cars would need to be run and the earnings of the railroads might be slightly reduced. But whether the Government should decide

to extend its parcels service or not, would it not be to the advantage of the railroad companies, as they are now constituted, to extend their freight service so as to include all the express traffic not handled through the mails?

The express business was organized as a separate service by companies distinct from the railroad corporations at a time when the railway systems were small and when their facilities for handling traffic expeditiously either over short or long distances were undeveloped; but those conditions have ceased to exist now that the railroads of the entire country have been grouped into a few large systems. There are single systems of roads comprising as many miles of line as are covered by the service of the large express companies. It has now become entirely a matter of expediency with many of the railroad companies whether they shall themselves handle the express business done over their lines or whether they shall delegate the service to some other company. Some of the large railroad systems now have their own express service, and the assumption of the service by other systems will be a logical consequence of the recent and the prospective consolidation of railway management.

The express service as now performed by companies separate from the railroad organization has the merits of safety, speed, and concentration of responsibility. The shipper is well served by a company which he can readily hold responsible. The objections urged against the present organization of the express service are that rates are high, that two companies are engaged in doing a work that could be performed by one—that the express company is a wheel within a wheel—and that the delegation of the express traffic to special companies has caused the railroads to be less zealous than they otherwise would have been in extending their fast freight serv-

ice, and in developing a speedy local freight service which would be of especial advantage in certain lines of production and trade.

REFERENCES FOR FURTHER READING

United States Census, 1880, vol. iv, pp. 594–610, 855–856; 1890, Report on Transportation Business, part ii, pp. 491–498.

Stimson, A. L. History of the Express Companies, and the Origin of American Railroads, pp. 489–532; second edition, 1858.

Report of Massachusetts Railway Commission, 1870, pp. 69–75.

Testimony taken by the Commission to Investigate the Postal Service, 1900. Government Printing-Office, Washington, D. C. Part i, pp. 29–62, statement of John J. Valentine, president of Wells, Fargo & Co.; pp. 512–532, statement of Henry S. Julier, general manager American Express Company. Part ii, pp. 687–696, statement of Levi C. Wier, president Adams Express Company.

Dabney, W. D. The Public Regulation of Railways, 1889, ch. ix.

The Official Guide of the Railways and Steam Navigation Lines of the United States. This contains a table giving the name of the express company operating over each railroad system in the United States.

CHAPTER XII

THE MAIL SERVICE OF THE RAILWAYS

The transportation of the mails, like the freight, passenger, and express services, is a distinct and separately organized department of the activities of the railroads. The details of the organization of this department differ in several particulars from those of other branches of the railroad service, because the mail traffic has several unique characteristics.

In studying the railway mail service we are considering only a part of the general postal service of the Government, but the part under consideration occupies a central and indispensable place in the entire service, and a clear presentation of the chief facts regarding the railway mail service reveals something concerning most branches of the postal service. For a detailed study of the activities of the post-office the references at the close of this chapter will be of assistance.

The volume of the mail traffic is growing rapidly, more than proportionately with the increase in population. The more highly organized business methods become and the wider the territory reaches over which men extend the activities of their business, the more largely the mails are used. The more general education becomes, the more time wage-earners and their families have for letter-writing and for reading, and the more surplus income they have for the purchase of stamps and literature, the more largely is the postal service employed.

The growth of the mail traffic is a general index of the progress of civilization, and as the great bulk of mail-matter is transported by the railroads, their mail business is an equally instructive index.

Mail-matter as well as freight is classified, but different principles govern the two classifications. Freight is classified with reference to maximum traffic and maximum revenue, whereas the aim of the Government is not to derive a surplus revenue from the postal service, but to administer the post-office in such a way as to make it contribute most largely to the convenience of business and to the promotion of public intelligence. If total receipts equal total expenditures, the Government is satisfied; and in order to make the educational value of the mails as great as possible, most printed matter is carried at a loss, some not being charged any postage whatever, the deficits in that part of the service being made good wholly or in part from the receipts from other parts.

The four classes of mail-matter comprise: First, *letters*, all written matter, and all sealed packages, the rate being two cents an ounce. Second, *newspapers*, magazines, and other periodicals issued at intervals not exceeding three months. The rate on this class of mail is a cent for four ounces, but when mailed by the publisher the rate is one cent a pound. Local newspapers circulate free of postage within the county of publication, an exception being made of the circulation in cities having a free-delivery service. Third, *books*, pamphlets, and all printed matter other than periodicals, the rate being a cent for two ounces, the limit of weight for a package being four pounds, with the exception of a single volume exceeding that weight. Fourth, all mailable *merchandise* so prepared for mailing as to be easily taken from the wrapper and examined. The rate is a cent an ounce, except for seeds, roots, cuttings, bulbs, plants, and scions,

which pay only a cent for two ounces. Much mail of all classes is carried free, the "franking" privilege being granted to Congressmen and Government officials for all official business.

According to the report of the Postmaster-General for the year ending June 30, 1901, "the number of pieces of mail-matter of all classes handled by the postal service during the fiscal year reached the total of 7,424,390,329. As near as can be estimated, the several classes were divided into the following proportions: Letters, prepaid and official, 3,604,322,767; postal cards, 659,614,800; newspapers and periodicals, or second-class matter, 2,206,791,539; third- and fourth-class matter, 953,661,223." These figures are only approximately correct, being estimates based on a counting and weighing for one week in 1890. The accuracy of the test[1] made in 1890 has been questioned, but the figures based on that test are the only ones available. The estimated number of pieces of all kind mailed in 1906 was 11,361,090,610.

The figures regarding the weight of mail-matter other than second-class mail handled by the post-office are but little more definite. The second-class matter mailed in bulk by publishers and news-agents in 1907 amounted to 712,945,176 pounds. The periodicals delivered free of charge within the county of publication are estimated to have weighed 52,460,251 pounds, making the total of second-class matter mailed free or at pound rates 765,405,427 pounds. This sum is estimated to be two-thirds of the total mail-matter included in all classes. According to this estimate, the mails handled during the year ended June 30, 1907, weighed about 1,148,000,000 pounds, or 574,000 tons. It is to be understood that these figures

[1] See Tunell, Railway Mail Service, pp. 77–81.

do not include the weight of the sacks, racks, and other necessary equipment transported with the mail, which exceeds the weight of the mail-matter.[1]

Prior to 1907 individuals had tried to determine the average distance which each pound or ton of matter is carried, and estimates of 328 miles, 442 miles, and 813 miles had been made; in 1907 the Post Office Department calculated the average haul of second-class mail to be 540 miles. The average haul is an important figure, because this distance must be known in order to calculate the average rate per pound and ton per mile paid by the United States for carrying the mails. Not knowing this rate per pound per mile for carrying the mails, it is not possible to compare satisfactorily the mail with the express and passenger services as regards rates.

The Government employs railroads, steamships, stage-coaches, and messengers to carry the mails, but over 86 per cent of the total weight of mail and equipment, it is estimated, is transported by the railways. A part of the mail transported by the railroads is carried in closed pouches in baggage-cars. In the fiscal year 1907 the closed-pouch and express-pouch services of the mails amounted to an aggregate pouch-mileage—one pouch one mile—of 127,085,635. A much larger amount of mail was carried in the "railway post-offices," or cars equipped as a post-office. These cars are in charge of messengers who sort the mail as it is received and place in separate pouches the mail for each city, and if the city is a large one, for various sections of the city. Sometimes the railway post-offices occupy an entire car (some trains being composed only of mail-cars), and sometimes they

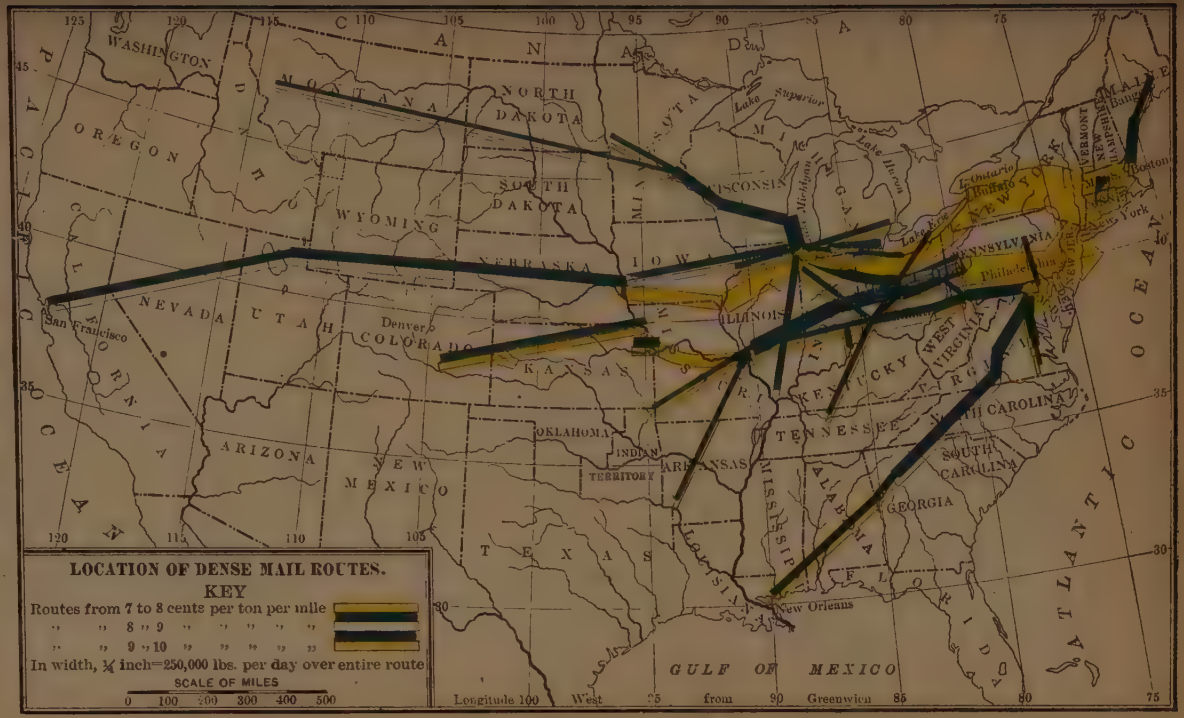
[1] For another estimate of the weight of the mails see the report of the Postmaster-General for 1900, p. 258; also Tunell, Railway Mail Service, pp. 199–201.

occupy a part of a car, usually the baggage-car, in which an apartment is fitted up as a post-office. In 1906 "the miles of railroad covered by full railway post-office lines was 53,549." The miles run by crews in charge of these cars amounted to fully 100,000,000, and by crews of the apartment post-office lines a greater mileage. In the year ending June 30, 1907, the mails were carried on 207,237 miles of railroads in cars or mail-trains. The messengers or crews in charge of the mails traveled 286,425,240 miles on trains and boats.

The figures compiled in the office of the Second Assistant Postmaster-General, who has charge of the transportation of the mails, include some railroad mileage not comprised in the figures cited, and make the length of the railroad routes over which the mails were carried in 1907 207,237 miles. If each car carrying the mails be taken as a unit, the "annual travel" or car mileage aggregated 387,557,165.

The Second Assistant Postmaster-General estimates that during the fiscal year 1907 the railway postal clerks handled 11,153,019,150 pieces of first-class mail and 9,330,976,200 pieces of all other classes, making a total of 20,483,985,350 pieces. In addition to this they handled 51,321,134 packages and sacks of registered mail. These sums make a total nearly twice the entire number of pieces of mail transported by the railroads and all other carriers, but this simply means that the same piece of mail may be handled by more than one railway clerk, that a package of mail may pass over two or more mail-routes on the way to its destination. The accompanying map, taken from the report made by Prof. Henry C. Adams to the Commission to Investigate the Postal Service, shows the routes over which the mail traffic is heaviest.

A table showing the entire mail transportation service


LOCATION OF DENSE MAIL ROUTES.
KEY
Routes from 7 to 8 cents per ton per mile
" " 8 " 9 " " " " " "
" " 9 " 10 " " " " "
In width, ¼ inch=250,000 lbs. per day over entire route
SCALE OF MILES
0 100 200 300 400 500
Longitude 100 West 75 from 90 Greenwich 85 80 75
WASHINGTON
OREGON
CALIFORNIA
NEVADA
UTAH
ARIZONA
NEW MEXICO
COLORADO
WYOMING
MONTANA
NORTH DAKOTA
SOUTH DAKOTA
NEBRASKA
KANSAS
OKLAHOMA
INDIAN TERRITORY
TEXAS
MINNESOTA
IOWA
MISSOURI
ARKANSAS
LOUISIANA
WISCONSIN
ILLINOIS
MICHIGAN
INDIANA
KENTUCKY
TENNESSEE
MISSISSIPPI
ALABAMA
GEORGIA
FLORIDA
SOUTH CAROLINA
NORTH CAROLINA
VIRGINIA
WEST VIRGINIA
OHIO
PENNSYLVANIA
NEW YORK
MAINE
VERMONT
NEW HAMPSHIRE
MASSACHUSETTS
RHODE ISLAND
CONNECTICUT
Lake Superior
Lake Michigan
Lake Huron
Lake Erie
Lake Ontario
San Francisco
Denver
New Orleans
Boston
New York
Philadelphia
Baltimore
Buffalo
GULF OF MEXICO
ATLANTIC OCEAN
PACIFIC OCEAN

by all routes and carriers indicates something concerning the extent of the service performed by the railroads.

The Mail Service in Operation June 30, 1907

Service.	Number.	Aggregate length, miles.	Annual rate of expenditure.
Star routes	14,976	194,658.45	$7,232,232.43
Special office routes	1,003	12,832.97	34,067.75
Steamboat routes	222	36,290.10	804,737.51
Railroad routes	3,224	207,237.87	45,118,872.34
Railway post-office cars	.....	.....	5,889,238.98
Railway mail service (officers and clerks)	14,357	.....	15,248,601.55
Mail messenger routes	7,455	5,013.08	1,370,759.06
Wagon routes (in cities)	292	1,001.66	1,215,621.65
Electric and cable car routes	487	6,343.89	786,607.39
Pneumatic-tube routes	5	28.52	450,555.44
Necessary and special facilities on trunk lines	1	.....	25,000.00
Mail equipment	.....	.....	507,063.92
Freight or expressage on empty mail bags, etc	.....	.....	125,621.81
Miscellaneous items	.....	.....	113.55
Total inland mail service	.....	.....	$78,809,093.38
Foreign mails:			
Aggregate cost		$3,123,499.52	
Less intermediary service to foreign countries		181,682.85	2,941,816.67
Total	.....	.....	$81,750,910.05

The star routes are those over which the mails are carried by wagon or horseback service between places not reached by railroads or steamboats. The special office service is "but a temporary arrangement for the supply of newly established post-offices that are not on or near the lines of existing routes, and as soon as the new office shows a number of people to be supplied, or an amount of mail to be carried that will justify such action, regular contract service is provided for its supply." The surprising fact shown by the table is the number and length of the routes over which horses are used to trans-

port the mails. The star and special office routes are the ones which reach the scattered population and enable them to share indirectly in the facilities of the railway mail service. The amount of mail carried beyond the railroad stations, however, is a relatively small share of the total, the greater volume of traffic moving by rail between the large cities.

The assorting of mail while in transit was begun in this country in 1862, when Mr. William A. Davis, who was then chief clerk in the mailing department of the post-office at St. Joseph, Mo., fitted up the first railway postal cars. These cars were run on the Hannibal and St. Joseph Railroad, and were put in service to facilitate the prompt forwarding of the overland mails westward from St. Joseph, an important distributing point at which the mails were then transferred from the railroad to the "overland stages." The advantages of having the mails reach the distributing point assorted ready to be forwarded without delay to their several destinations were quickly recognized, and the traveling post-office was soon established on the principal lines of railroad.

In 1907 there were 1,286 whole cars equipped as post-offices and 3,400 more containing postal apartments. In most cases these postal cars are run singly as a part of a passenger-train, but over the routes where the mails are heaviest "fast mail-trains" are run composed entirely of postal cars. According to Mr. Tunell, the mail business over a particular route is generally an adjunct of the passenger service until a weight of 50,000 pounds is reached for a single mail, and when that weight is exceeded fast mail-trains are put into service and "run at a very high rate of speed wholly or almost wholly to expedite the mails."

The postal cars now being put into service are models of the builder's art. They are 60 feet in length, built

especially strong, mounted on the best of trucks, and are lighted and heated by the most modern appliances. The Government specifies the kind of cars to be used, and every effort is made to insure the safety of the mails and the messengers, and to facilitate the accurate and rapid assortment of the mails. In these traveling post-offices much of the work is performed that was formerly done at the offices in the distributing centers. The amount and importance of the work done on these postal cars are well shown by an instance cited in Mr. Tunell's book on the Railway Mail Service. "On the arrival of the great mail-trains in Chicago in the morning, the letter mail for the business portion of the city is actually ready for the carriers, and the letters for the remainder of the city are sorted and ready to go at once to their respective stations. Chicago alone thus requires about 175 separations." It was stated by the Postmaster-General in 1895 that "it is the intention eventually to absorb all the work of city distribution into the railway mail service whenever mails can be expedited thereby."

The services performed by the railroad companies in the transportation of the mails consist chiefly of providing and equipping the postal cars and hauling those and the other cars used for carrying the mails over the routes designated by the Government. Many people suppose that those are the only services rendered by the companies; but there are several other duties performed by the railroads in connection with the carriage of the mails. The employees of the railroad company are required to load the mail into the cars, and when the mails are not in charge of a messenger they are unloaded by the company's agent. The transfer of the mails from car to car and from station to station when that service is necessary is made by the company. Except in the large cities, where the carting of the mails is done by the post-office, the railroad

company carries the mails between the station and the office. At way-stations and intermediate post-offices the companies are not obliged to carry the mails more than 80 rods, but at terminal stations there is no limit to the distance. In the large cities the postal cars must be placed in the central station at a convenient place for loading, and they must remain there several hours before the departure of the train by which they are taken, in order that the clerks may have the assortment of the mail well under way when the train pulls out. It is of course a matter of considerable expense to the railroad companies to provide space for the mail-cars in their usually crowded passenger terminals. The labor and terminal expenses incurred by the railroad companies in the mail service are said by the companies to be appreciably greater than for the express business.

The Government requires the railroads to give the mail-trains the right of way over all other trains. The postal cars must usually be attached to the fastest trains, and the mails must be taken by such trains as the Government may select. The companies are not permitted to leave any mail behind; whatever the demand for space may be, the demand must be met; and, as has already been stated, the Government stipulates the kind of cars to be used for the postal service, requires the cars to be stationed at the terminals where they can be readily loaded and unloaded; stipulates that companies shall attend to the handling of the mail immediately on the arrival of the trains, and under certain conditions that they shall carry the mails between the stations and the post-offices. These strict regulations are necessary to secure the speedy and reliable mail service enjoyed by the public; but they make the transportation of the mails an expensive service, for the performance of which the Government makes large outlays.

As the table on page 175 indicates, the Government paid out nearly $82,000,000 in the fiscal year 1907 for the transportation of the domestic and foreign mails. This was somewhat under half the total receipts of the Post-Office Department, which for that year amounted to $183,585,005. The railroads received $51,008,111—28 per cent of the Government's total postal receipts—for carrying the mails and maintaining the post-office car service. In addition to this the Government paid $25,000 for "special facilities" over one route. In order to secure an especially fast mail service over a particular route or a service at an hour when a railroad company could not afford to run a train without extra compensation, Congress has made a few special appropriations each year. These "special facilities" are not considered necessary by the Post-Office Department, which does not favor the action taken by Congress. This form of expenditure wisely ceased in 1907.

In accordance with acts of Congress passed in 1873, 1876, 1878, and 1907, the pay to the railroads for carrying the mails is based upon the weight of the mail carried, the distance the mail is transported, and the number of full-sized postal cars operated by the railroad. The maximum rates now paid are shown by the following tables, taken with amendment from Mr. Tunell's book:

Rates based on the Weight of the Mails

Average Daily Weight of Mails over Whole Route.	Pay per mile per annum.	Rate per ton per mile.
200 pounds	$42.75	$1.171
500 "	64.12	.702
1,000 "	85.50	.468
1,500 "	106.87	.390
2,000 "	128.25	.351
3,500 "	149.62	.234
5,000 "	171.00	.187
5,000 to 48,000 pounds, per ton	20.30	.058
Above 48,000 pounds, per ton	19.24	.052

The additional pay received by the railroads that supply and haul full-sized railway post-office cars is as follows:

Rates allowed for Full-sized Post-Office Cars

Length of Car.	Rate per annum per mile of track.	Rate per mile run by cars.
40 feet	$25.00	3.424 cents.
45 "	27.50	3.767 "
50 "	32.50	4.460 "
55 to 60 feet	40.00	5.479 "

In order to secure the rates paid for hauling postal cars as given in the table, the cars must make a *round trip daily.* If a car makes the trip but one way each day, the pay received is one-half the rate named in the table. As was stated on page 176, these post-office cars, in 1907, numbered 1,286. The service performed by them cost the United States Government $5,889,239.

The table giving the rates based on the weight of the mails shows that the rate of compensation is much higher for small than for large quantities of mail-matter. The pay per ton per mile for a daily mail averaging 2,000 pounds is only half that for a daily weight of 500, and the ton mile rate on 5,000 pounds per day is but slightly more than one-fourth—for 50,000 pounds, one-twelfth—the rate for 500 pounds a day. As the mail carried grows in weight, the pay received by the railroad increases, but not in proportion to the volume of traffic.

The daily weight of mail carried by the railroads over the various routes is ascertained by weighing the mails for ninety or more consecutive working days once in four years. The average daily weight during the period of weighing is assumed to be the daily average for the four succeeding years. As a matter of fact, there is a considerable increase each year in the amount of mail-matter,

and the railroad companies, toward the close of the four years that intervene between the weighings, carry more weight of mail than they are paid for transporting. It has been estimated that the weight paid for is about 91 or 92 per cent of the weight transported.

The receipts of the Post-Office Department have usually been considerably less than the expenditures, and this has caused Congress and various individuals to inquire whether the railroad companies are being paid too high rates for carrying the mails.

The postal deficits are caused by the cheap rates of postage charged for second-class matter, and by various evasions of the law by publishers and others whereby third-class matter, which should pay 8 cents a pound for postage, is classified as second-class matter, and sent at the publisher's rate of one cent a pound. The second-class matter weighs much more than that of all the other classes, comprising nearly seven-tenths of the total weight. Most of the second-class mail pays only the cent-a-pound rate, and it was estimated by Postmaster-General Smith that the 429,444,573 pounds of mail taken at the pound rate equaled 60 per cent of all the mail handled by the post-offices in the fiscal year 1901. The total receipts from the mails, not including the money-order business, in 1907 were $179,845,291, but the receipts from the mail which paid the pound rate were only $7,127,752—less than 4 per cent of the total.

The remuneration received by the railroads for carrying the mails being based on weight, distance, and number of postal cars used, the Government pays the same rate for all classes of matter. Postmaster-General Smith calculated that it cost the Government not less than five cents a pound for the transportation of the second-class mail-matter, and that there was a net loss of four cents a pound, or $17,277,783, in 1901, incurred

in the carriage of second-class matter handled at pound rates. This loss was more than four times the total deficit for that year, most of the heavy losses connected with the second-class mail being covered by the profits derived from handling the first-class mail.

In 1901 the Postmaster-General issued rules providing for a stricter classification of mail-matter, and the exclusion from the pound rates of the second-class printed matter clearly belonging in the third class. These new rules and the large use of the mails accompanying the great prosperity in business made the mail receipts during the year ending June 30, 1907, nearly equal the expenditures. The deficit is, however, liable to increase unless Congress shall so amend the postal laws as to restrict somewhat the use of the second-class by those now securing the privilege of pound rates.

The cost to the Government of the railway mail service does not seem exorbitant. The rates are based upon the act of 1878, slightly amended in 1907, but the rate of pay declines with the increasing volume of mail traffic. The rates now paid for carrying the mails are somewhat higher than the rates charged on express matter, but that is fully justified by the differences in the service. Mail-matter is entitled to a higher classification than express matter, and the conditions imposed on the railroads in the mail service are more exacting than those which govern the express traffic. One method of testing the fairness of the rates for carrying the mail is to compare the decline in railway mail pay with the decrease in passenger and freight charges. The investigations made by Prof. Henry C. Adams, in 1899–1900, for the Joint Congressional Commission on Postal Affairs, shows that the average rate paid for transporting the mails in the United States has declined much faster than passenger fares have, but has not fallen so rapidly as the

average freight rate. This conclusion is also corroborated by a study made by Mr. Tunell of the rates on two railroad systems.

At the present time the Government annually pays the railroads 28 per cent of its total expenditures for the mail service. Although the railroads have been substituted for other carriers to a large extent, and the speed at which the mails are moved has been greatly increased, and although much of the work formerly done in the distributing offices has been transferred to the railway post-office cars, the share of the total mail expenditures received by the railroads for their mail service has become smaller. The decline in the rate paid by the Government per mile per ton of mail carried has made this possible.

REFERENCES FOR FURTHER READING

Annual Report of the Postmaster-General. [The reports of the assistant postmasters-general contain a detailed account of the workings of the different branches of the mail service.]

Tunell, G. G. Railway Mail Service, 1901. [A volume containing much information, especially regarding the payments received by the railroads for carrying the mails.]

Tunell, G. G. Railway Mail Service: A Historical Sketch. [A pamphlet of 24 pages published by R. R. Donnelley & Sons, Chicago, 1902.]

History of the Railway Mail Service. Executive Document 40, Forty-eighth Congress, second session, 1885.

Testimony taken by the Commission to Investigate the Postal Service. Published as a Government document, 1900. Three volumes, parts i and ii dealing with Railway Mail Pay, and part iii with Second-Class Mail-Matter, Pneumatic-Tube Service, etc. The second volume contains a most instructive Special Report on Railway Mail Pay, by Prof. Henry C. Adams, statistician to the Interstate Commerce Commission.

Newcomb, H. T. The Postal Deficit, 1901. A volume written to show that the railroads are not paid an excessive sum for carrying the mails.

CHAPTER XIII

THE ORGANIZATION OF THE SERVICE

A RAILROAD company is a large corporation with complex activities carried on over wide areas by an army of employees sometimes numbering tens of thousands. To perform its services with precision, to maintain authority, enforce responsibility, and insure financial honesty throughout all grades of officials and employees, and thus to conduct its services with benefit to the public and profit to itself, the corporation requires a detailed and highly specialized organization of maximum efficiency. There must be an unbroken line of responsibility from the lowest subordinate to the president, and the organization by which this is accomplished must have flexibility enough to permit of improvements in the service and the adoption of new technical and financial methods.

The railroad company in common with other corporations has in its organization departments and officials for the management of its financial and legal affairs. The stockholders, composing the company, choose directors to serve as a governing body, and the directors select a president, secretary, treasurer, comptroller, and a legal counselor. Within this general corporate organization there is also built up a specialized organization to accomplish the work which the company exists to perform—the safe and speedy transportation of persons and things.

The special transportation organization is concerned with four general duties. One is to provide and main-

tain in condition for use a roadway; another is to obtain, keep in order, and operate vehicles of such number and variety as the traffic may require; the third is to furnish facilities that will enable passengers and shippers to use the vehicles and road-bed; and the fourth is to arrange the financial and business relations of the carrier with its patrons in such a way as to promote the interests of both parties.

Corresponding to each of these several kinds of corporate and specialized activities, there is a department of the railroad company's organization. Two departments are concerned strictly with the affairs of the company as a corporation, the secretary's office and the law department. The *secretary's department* has charge of the company's records, and of the great volume of correspondence carried on within the corporation, and with outside organizations and individuals. In the *law department* are executed the many contracts affecting the finances and business activities of the corporation; and the counsel and solicitors connected with this department protect the interests of the company in the legal controversies unavoidable in the conduct of great business enterprises.

The *financial department* is concerned with the affairs of the general corporation, and is the fiscal agent of the special organization by which the transportation service is performed. It has nothing to do with operating the transportation machine, its duties being connected solely with the receipts and disbursements resulting from conducting transportation. This highly important department is usually under the immediate supervision of one of the vice-presidents of the company. It includes the offices of the treasurer and comptroller. The duties of the treasurer are those ordinarily pertaining to that officer in all business organizations. He must account to the corporation for all its income and for all money

paid out; but his chief duty is to see that none but properly authorized payments are made from the funds of the company. He is also the officer who keeps the company informed as to the status of its finances.

The comptroller and the auditors under him are the company's bookkeepers, charged with the duty of keeping a detailed record of the receipts from the freight, passenger, mail, express, and from other sources of revenue and with recording all expenditures. In the comptroller's office also elaborate statistical compilations are made for the information of officials in charge of the different departments of the railroad, and for the reports published by the National and State governments. The financial and traffic data furnished by the treasurer and comptroller, and the facts regarding car and train movements given by the car accountant's office in the operating department, supply most of the material used by the president and directors in preparing their annual reports to the stockholders composing the company.

The part of the railroad organization which is directly and solely concerned with transportation is divided into the *operating* and *traffic departments*, each of which is large and for the purposes of efficient administration is necessarily subdivided into several distinct branches of service. The operating department is the most comprehensive of all, and to it is entrusted the work of providing and operating the machine that moves the traffic. In doing this the operating department performs three general duties: it provides the railway and all the structures pertaining to the line, it supplies the equipment, and runs the trains. Each of these duties is made a special branch of the service.

The operating department, as a whole, is under the control of a general manager, who is the most responsible and usually the hardest worked subordinate officer

in the organization. Sometimes one of the vice-presidents of the company is general manager.

The first of the three main divisions of the operating department is the *roadway department*, which constructs and maintains everything connected with the road—the track, bridges, buildings, pumping-machinery, and signal apparatus. These engineering works are in charge of a chief engineer, who is sometimes subordinate to the general manager and at times of equal rank with him. Subordinate to the chief engineer and the general manager are the engineer in charge of new construction, the one entrusted with maintenance of way, and the one who constructs the bridges and buildings. Each of these engineers has the necessary force of assistants and workmen.

The branch of the operating department in charge of the construction and maintenance of locomotives and cars is usually called the *machinery department*. Some companies buy all new equipment, and, in their case, the machinery branch of the service is busied only with repairs and maintenance, but many of the large railroad corporations build at least a part of the locomotives and cars used on their lines. The repairing and constructing of locomotives is in charge of a general superintendent or chief engineer of motive power, assisted by a master machinist, a master car builder, and the requisite foremen and subordinates.

The other main division of the operating branch of the organization is the *transportation department*, which manages the equipment and does the work of moving persons and things. At the head of this department is a general superintendent of transportation, and, as Mr. Henry S. Haines says in his book on American Railway Management, he has control of "all the instrumentalities essential to transportation from the time that a person or

thing comes under the care of the corporation until they pass out of it." The authority of this officer extends over "the station and yard service, the cleaning and handling of engines and cars, the movement of trains, the receiving, loading and billing, unloading and delivery of freight." The services as a whole are performed by two sets of men, those composing the station force, and those operating the trains or the train crews. Each of these forces of men has its own organization in charge of a chief responsible to the general superintendent and the general manager.

The relations of the carrier and its patrons are adjusted by the *traffic department*, which solicits business, classifies the traffic, determines charges, collects and turns over to the auditor and comptroller of the financial department the revenues received from the patrons of the road, settles as far as possible the claims of passengers and shippers for lost baggage and freight, and in general concerns itself with increasing the traffic and earnings of the company. It is the business of the operating department to conduct the transportation service economically, expeditiously, and safely; it is the object of the traffic department to secure the maximum passenger and freight business at remunerative rates. One of the vice-presidents of the company usually has supervision of this department, which is in direct charge of a traffic manager, under whom there are the general freight-agent and the general passenger agent, whose duties are indicated by the title of their positions. Under the general passenger agents are the division passenger, ticket, and baggage agents, and under the general freight-agent are the division freight-agents and the managers of the fast freight lines. Sometimes the freight claim agent is subordinate to the general freight-agent, and sometimes is coordinate with that officer. Some companies have a

chief claim agent subordinate only to the traffic manager and those above him. The general passenger agent has charge of the mail and express services.

A large railroad requires a great variety of supplies, and for the purchase and distribution of these supplies it has been found best to organize a distinct *purchasing department*, usually directly subordinate only to a vice-president of the company, and hence coordinate with the other departments of the service. The purchasing agent is at the head of the department, and subordinate to him are the storekeepers, who distribute the supplies upon the presentation of properly authorized requisitions. Formerly it was customary for each department to purchase its own supplies, but the plan of having all purchases made by one officer is more economical, and has been generally adopted.

Every railroad company is the owner of a large amount of *real estate*, the purchases and transfers of which are in charge of a real-estate agent and a chief conveyancer, subordinate either to the president or to a vice-president of the company. Some of the Western railroads received large grants of public land, the sale of which is put in charge of a special department.

The business of insuring the buildings of the company against losses from fire, whether by the plan of company insurance or by means of fire-insurance companies, is sometimes, although not often, in charge of an *insurance department*, with a superintendent at the head.

Many railroad corporations have *relief departments* to provide aid for disabled or sick employees. With some companies the relief consists only in maintaining hospitals, while others have fully organized "relief departments" to which the employees of the company are expected to belong and from which the members receive financial aid in case of sickness or accident. The family or heir is

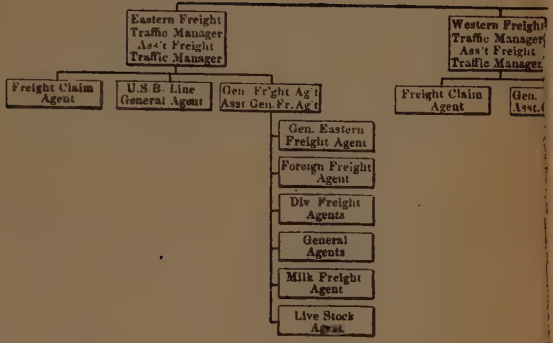
paid a stipulated benefit upon the death of a member. These departments are supported mainly by the employees, but in part by the company, which bears the expenses and assumes the risks of administration.

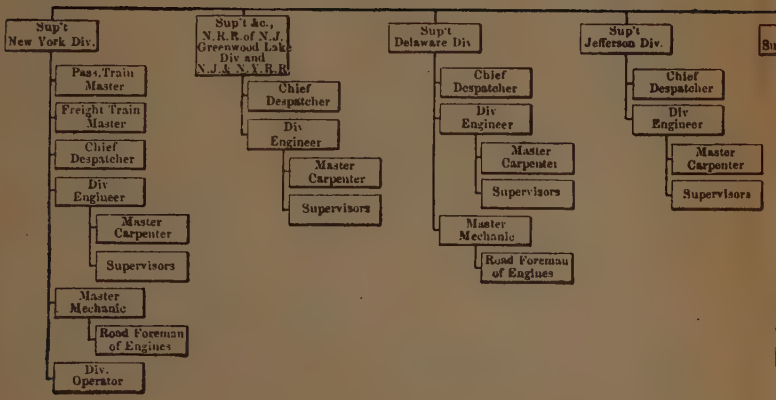
The organization of a modern railroad corporation seems complicated and detailed, but the main branches and subdivisions are not many and not hard to hold in mind. The foregoing account of the several departments can be made more concrete by studying the organization of any large railroad company. The organization of the Erie, Illinois Central and Pennsylvania Railroads are here given in outline, but there are others equally typical which the student might study to advantage. The best organization to study is that of the railroad whose offices are nearest at hand.

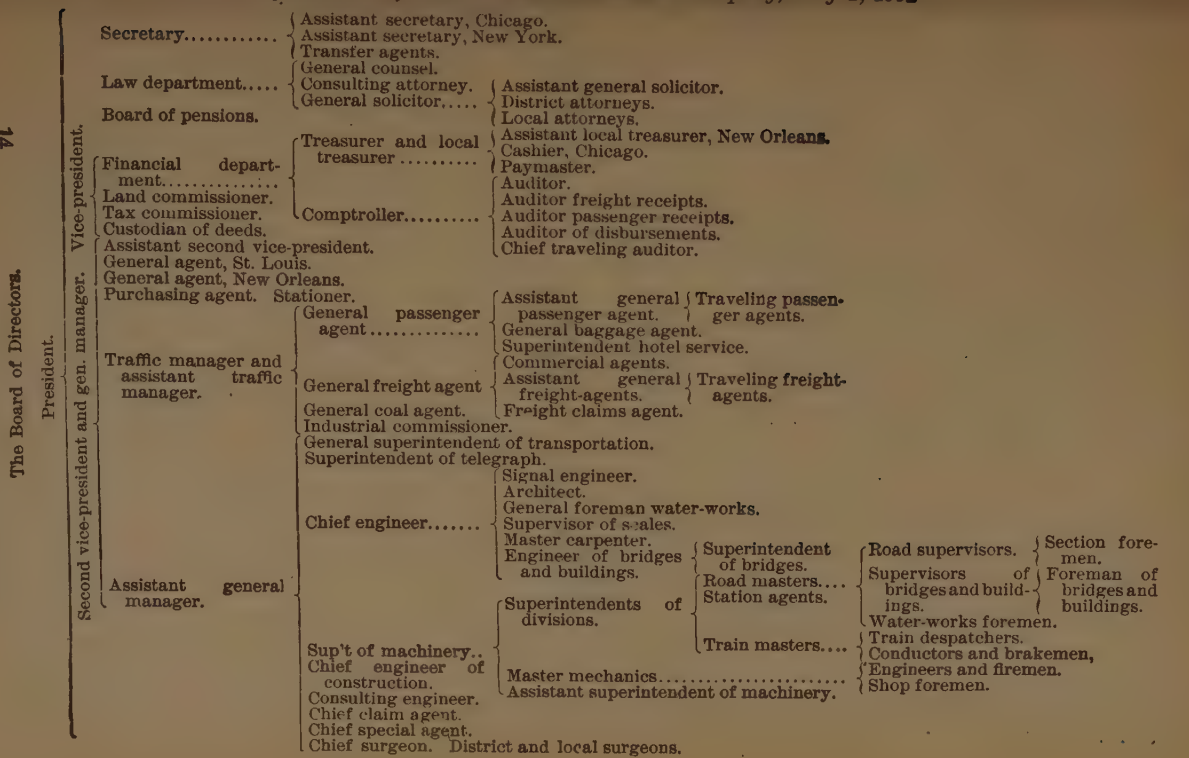
The organization of the Erie Railroad in 1900 is shown by a chart. This is the clearest way of presenting the inter-relations of the several parts of the system. From the tables given for the Illinois Central and the Pennsylvania, charts can readily be constructed.

The tables on pages 191–193 show the main departments and the principal subdivisions to be found in the organization of all large railroad companies. The lines of authority from the top to the bottom of the service and of responsibility from the bottom to the top are shown for each part of the organization.

The Pennsylvania Railroad Company, being larger than the Illinois Central, with a heavier traffic and more miles of track, has its lines separated into more "divisions." The Pennsylvania officials below the general superintendents are shown for only one of the seven general divisions. Of these seven, the Pennsylvania Railroad division is by far the largest, and comprises twelve important subdivisions; but the United Railroads of New Jersey division, although much smaller, has nearly the


Eastern Freight Traffic Manager Asst Freight Traffic Manager
Western Freight Traffic Manager Asst Freight Traffic Manager
Freight Claim Agent
U.S.B. Line General Agent
Gen Fr'ght Ag't Asst Gen.Fr.Ag't
Freight Claim Agent
Gen. Asst.
Gen. Eastern Freight Agent
Foreign Freight Agent
Div Freight Agents
General Agents
Milk Freight Agent
Live Stock Agent


Sup't New York Div.
Pass. Train Master
Freight Train Master
Chief Despatcher
Div Engineer
Master Carpenter
Supervisors
Master Mechanic
Road Foreman of Engines
Div. Operator
Sup't &c., N.R.R. of N.J. Greenwood Lake Div and N.J. & N.Y.R.R.
Chief Despatcher
Div Engineer
Master Carpenter
Supervisors
Sup't Delaware Div
Chief Despatcher
Div Engineer
Master Carpenter
Supervisors
Master Mechanic
Road Foreman of Engines
Sup't Jefferson Div.
Chief Despatcher
Div Engineer
Master Carpenter
Supervisors


The Board of Directors.
President.
Second vice-president and gen. manager.
Vice-president.
Secretary.....
Assistant secretary, Chicago.
Assistant secretary, New York.
Transfer agents.
Law department.....
General counsel.
Consulting attorney.
General solicitor.....
Assistant general solicitor.
District attorneys.
Local attorneys.
Board of pensions.
Financial department.....
Treasurer and local treasurer.....
Assistant local treasurer, New Orleans.
Cashier, Chicago.
Paymaster.
Land commissioner.
Tax commissioner.
Custodian of deeds.
Comptroller.....
Auditor.
Auditor freight receipts.
Auditor passenger receipts.
Auditor of disbursements.
Chief traveling auditor.
Assistant second vice-president.
General agent, St. Louis.
General agent, New Orleans.
Purchasing agent. Stationer.
Traffic manager and assistant traffic manager.
General passenger agent.....
Assistant general passenger agent.
Traveling passenger agents.
General baggage agent.
Superintendent hotel service.
Commercial agents.
General freight agent
Assistant general freight-agents.
Traveling freight-agents.
General coal agent.
Freight claims agent.
Industrial commissioner.
Assistant general manager.
General superintendent of transportation.
Superintendent of telegraph.
Chief engineer.....
Signal engineer.
Architect.
General foreman water-works.
Supervisor of scales.
Master carpenter.
Engineer of bridges and buildings.
Superintendent of bridges.
Road supervisors.
Section foremen.
Supervisors of bridges and buildings.
Foreman of bridges and buildings.
Road masters....
Station agents.
Superintendents of divisions.
Water-works foremen.
Train masters....
Train despatchers.
Conductors and brakemen,
Sup't of machinery..
Chief engineer of construction.
Master mechanics.....
Engineers and firemen.
Shop foremen.
Assistant superintendent of machinery.
Consulting engineer.
Chief claim agent.
Chief special agent.
Chief surgeon. District and local surgeons.

Organization of Pennsylvania Railroad, 1906.

Stockholders, Directors, and President.

- Secretary
- General counsel
- Board of officers of Pension department.
- First vice-president
  - Assistant secretaries
    - Assistant to secretary
      - Transfer clerk
        - Ass't transfer clerks.
    - General solicitor
      - Assistant general solicitors
        - Chief claim agent
          - District solicitors.
  - Ass't to first vice-president.
  - Comptroller and ass't compt.
    - Assistant to comptroller.
    - Auditor and ass't auditor mdse. frt. receipts.
    - Auditor and ass't auditor coal frt. receipts.
    - Auditor and ass't auditor passenger receipts.
    - Auditor and ass't auditor misc. rec'pts and acct's.
    - Auditor and ass't auditor of disbursements.
    - Auditor and ass't auditor Empire line.
    - Auditor and ass't auditor Union line.
  - Sup't employees' saving fund.
  - Ass't to second vice-president.
  - Chief of motive power.
  - Chief eng. and ass't chief eng.
    - Assistant to chief engineer.
    - Engineer of bridges and buildings.
    - Architect.
    - Assistant engineers.
    - Engineer corps.
  - Sup't insurance department
    - Ass't sup't insurance department.
- Second vice-president
  - General manager
    - Ass't to general manager.
    - General sup't of transportation
      - Sup't freight transp'n.
      - Sup't passenger transp'n.
    - General sup't of motive power
      - Mechanical engineer.
    - Chief eng. of maintenance of way
      - Eng'r maintenance of way.
    - Superintendent of telegraph.
    - General agents.
    - Purch'g agt. and ass't purch'g agts.
      - Ass't to purchasing agt.
    - Real estate agent
      - Ass't real estate agts.
    - General superintendents
      - Sup'ts of motive power.
      - Ass't eng'rs m've p'r.
      - Principal ass't eng'rs.
      - Division sup'ts.
        - Assistant engineers.
        - Train masters.
        - Station masters.
        - Station agents.
        - Baggage agents.
        - Division operators.
        - Train dispatchers.
        - Master mechanics.
    - Sup't voluntary relief department
      - Ass't sup't vol. relief department.
        - Road foremen of engines.
        - General foremen of car shops.
        - Foremen of car inspectors.
- Third vice-president (The third v.-p. has charge of the promotion of new lines and the construction of the N. Y. terminal.)
  - Ass't to third vice-president.
  - Engineer of branch lines.
  - Passenger traffic manager
    - General passenger agent and assistant general passenger agent.
      - Division ticket agts.
      - Dist. passenger agts.
      - Gen'l baggage agt.
- Fourth vice-president
  - Freight traffic manager
    - Gen'l freight agent, through traffic
      - Ass't gen'l freight agt.
        - Division fr't agents.
    - Gen'l freight agent, local traffic.
    - Freight claim agent
      - Ass't freight claim agt.
  - General coal freight agent
    - Coal freight agent.
  - Manager of the Empire line
    - Western sup't, Empire line.
  - Manager of the Union line
    - Western sup't, Union line.
    - Eastern sup't, Union line.
- Fifth vice-president
  - Treasurer and ass't treasurers
    - Assistant to treasurer.
    - Cashier and assistant cashier.
    - Registrar of bonds and ass't regist'r.
- Assistants to president.

Organization of Pennsylvania Railroad. Table showing Organization of the United Railroads of New Jersey Divisions

General Superintendent United Railroads of New Jersey

- Superintendent of motive power.
  - Assistant engineer.
- Principal assistant engineer.
- Superintendent New York division.
  - Master and assistant master mechanic.
  - Division operator.
  - Ticket receivers.
  - Train masters.
  - Station masters.
  - Road foreman of engines and assistant.
  - General foreman.
  - Lighter masters.
  - Assistant engineer.
    - Master carpenters.
    - Supervisors and assistant supervisors.
- Superintendent Amboy division.
  - Master mechanics.
  - Division operator.
  - Ticket receiver.
  - Train masters.
  - Station masters.
  - Road foreman of engines.
  - Assistant engineer.
    - Master carpenter.
    - Supervisors and assistant supervisors.
- Superintendent Belvidere division.
  - Master mechanic.
  - Division operator.
  - Train masters.
  - Road foreman of engines.
  - Assistant engineer.
    - Master carpenter.
    - Supervisor.
- Superintendent Jersey City ferries.
  - Superintendent floating equipment.
- Superintendent and assistant superintendent Delaware and Raritan Canal.
  - Superintendent steam towing Delaware and Raritan Canal.

same organization and practically the same distribution of duties among subordinate officials.

In the organization of every large railroad system it is necessary to have a territorial division of duties within most departments. This causes a table outlining the organization to appear detailed, but it is, as a matter of fact, very simple. The many parts of the large railroad corporations work together systematically, like the parts of the great locomotives that haul their trains.

REFERENCES FOR FURTHER READING

HAINES, HENRY A. American Railway Management, pp. 128–139.

The American Railway. Paper by E. P. Alexander on Railway Management, pp. 149–186.

The Railroad Gazette. August 21, 1900, chart of organization of Erie Railroad; December 14, 1900, chart of organization of Lehigh Valley Railroad; September 27, 1901, chart of organization of Illinois Central Railroad.

The Official Guide of the Railways and Steam Navigation Lines of the United States gives a list of the principal officers of each company, and thus gives an indication of the organization of each company.

CHAPTER XIV

THE ACCOUNTS AND STATISTICS OF THE RAILWAY SERVICE

Careful accounting is essential to an efficient performance of the railroad service, and a general understanding of railway accounts is necessary to an intelligent interpretation, by the student or the investor, of the financial and physical condition of a particular railroad company or system. In the administration of every large business enterprise, the directors and officials depend upon the accounts for the information upon which to act; and in the railway corporation especially, whose activities are scattered over a wide territory and are carried on in distinct departments, each employing a large force of men, it is necessary that those responsible for the policy of the company and for close supervision of the several branches of the service should be kept fully informed regarding the property, the receipts and expenditures, the needs, the deficiencies, and the accomplishments of each department. In the accounts as now kept by many railroad companies is focused a clear picture of the condition of the physical property of different kinds, of the extent of the several classes of services being performed, of the receipts and expenditures connected with the service, and the changes taking place month by month or year by year in the property, the services, and the finances of the company.

The figures regarding traffic receipts and expenditures are compiled from the way-bills, tickets, reports, vouchers,

and other papers sent to the offices of the treasurer and comptroller. These papers are all scrutinized and checked up, and the contents carefully recorded by the auditors who are subject to the comptroller. The records of car movements, train and engine mileage, are kept by the car accountants, who are usually subject to the general superintendents in the operating or transportation department. In this general department, likewise, are the engineers in charge of construction, maintenance of way and equipment, whose reports contain the statistics regarding the physical property.

The statistics of train, car, and locomotive performance are worked up in detail by the several departments having charge of the performance. The auditor gathers these statistics from the different officials, and makes such compilations and tabulations as may be needed. Ordinarily, the auditing department does not verify the traffic and operating statistics, unless some evident error suggests the necessity for a test. The statistics of the cost of handling freight traffic per ton per mile are worked up in the auditor's department by charging to the freight and passenger services respectively such expenses as can be thus classified, and by dividing between the two services such expenses as are common to both, sometimes according to the earnings and sometimes according to the locomotive or train mileage of the freight and passenger departments. Different companies compute statistics of ton mile cost by dissimilar rules, and such statistics, consequently, have little value for purposes of comparison.

From the detailed accounts kept by the auditor, concise reports are prepared monthly and yearly. About the 25th of each month the books are written up and posted for all classes of transactions carried on during the previous month. Then a summarized account for that month is prepared, covering the earnings from each

source, and the expenditures for operating expenses, taxes, rentals, improvements, construction, and equipment. This account contains a large number of entries. The operating expenses are divided into four large classes and fifty-three subclasses. Improvements, construction, and equipment cover thirty-eight entries.

From the proof-sheets of this account is prepared the auditor's monthly report, which includes a statement of the gross earnings, operating expenses, net earnings, improvements, construction and equipment, and also contains such statistical information as may be desired by the operating and executive departments—earnings and expenses per mile of road, per passenger and freight train mile, etc.

The accounts covering the business of the year are summarized and briefly discussed in the annual report, which, in the case of a large company, necessarily contains considerable detail and covers many subjects. The annual report, however, is readily divisible into three general parts: one dealing with income and expenditure, another with the financial affairs of the company, and the third with the traffic and physical condition of the property—track, structures of all kinds, and equipment.

The three general parts of the annual report and the main subdivisions are shown by the following tabular outline, taken, with slight changes, from Thomas F. Woodlock's Anatomy of a Railroad Report:

Outline of the Contents of a Railroad Report

I. Income or revenue account.
  1. Gross earnings.
    A. From operation.
      (*a*) Passenger traffic.
      (*b*) Freight traffic.
      (*c*) Baggage, mail, express, storage, stock-yards, elevators, steamers, etc.
      (*d*) Balance of car mileage, switching charges.
      (*e*) Telegraph companies.

B. From interest on loans and investments, rentals, and other income.

2. Operating expenses.
   - (*a*) Maintenance of way and structures.
     - (1) Repairs of roadway.
     - (2) Renewal of rails and ties.
     - (3) Repairs and renewals of bridges, buildings, and all other structures.
   - (*b*) Maintenance of equipment.
   - (*c*) Conducting transportation.
     - (1) Salaries and wages (operating department).
     - (2) Supplies (operating department).
     - (3) Car mileage and switching charges.
     - (4) Damages for injuries.
     - (5) Advertising.
     - (6) Outside agencies and commissions.
     - (7) Rents of tracks, yards, and terminals.
   - (*d*) General expenses.

3. Net income from all sources (gross earnings less operating expenses).
4. Fixed charges (interest on funded and floating debts, rentals, taxes, and sinking-funds).
5. Dividends, surplus, and "profit and loss" account.

II. Financial statement or balance-sheet.

1. Capital assets.
   - (*a*) Property and franchise or plant and equipment or "cost of road and equipment."
   - (*b*) Investments in real estate and securities.
   - (*c*) Sinking-funds.

2. Capital liabilities.
   Stocks and bonds (income, debenture and mortgage bonds).

3. Current assets.
   - (*a*) Cash on hand.
   - (*b*) Loans and bills receivable.
   - (*c*) Amounts receivable.
   - (*d*) Due from other companies and individuals.
   - (*e*) Due from the company's agents and officers.
   - (*f*) Advances to other companies.
   - (*g*) Sundry assets.

4. Current liabilities (operating liabilities and floating debt).
   - (*a*) Loans and bills payable.
   - (*b*) Accounts payable.

(*c*) Pay-rolls and vouchers.
(*d*) Interest and dividends accrued.
(*e*) Due to other companies (traffic balances).
(*f*) Sundry liabilities.

III. Physical statistics.
1. Length and characteristics of road (track, bridges, and structures).
2. Number and description of equipment.
3. Volume and character of business done (in the freight, passenger, and other branches of the service).

The revenue account is frequently presented under the two headings of income account and profit and loss account. The bookkeeping form of these two accounts and of the general balance-sheet is given as follows in Mr. H. C. Whitehead's pamphlet on the Railway Auditor:

Income Account

Dr.	*Cr.*
Operating expenses:	Earnings:
Maintenance of way and structures	Passenger
Maintenance of equipment	Freight
Transportation and traffic	Mail, express, and miscellaneous
General expenses	Interest and discount
Taxes	Income from investments
Rental of tracks and terminals	
Interest on bonds	
Balance, being net income for the year carried to profit and loss account	
Total	Total

Profit and Loss Account

Dr.	*Cr.*
Dividend No.	Balance brought forward from previous year
Amount written off by vote of directors for	Net income for year
Sundry adjustments	
Balance carried down	
Total	Total
	Balance (surplus) carried to general balance-sheet

and other papers sent to the offices of the treasurer and comptroller. These papers are all scrutinized and checked up, and the contents carefully recorded by the auditors who are subject to the comptroller. The records of car movements, train and engine mileage, are kept by the car accountants, who are usually subject to the general superintendents in the operating or transportation department. In this general department, likewise, are the engineers in charge of construction, maintenance of way and equipment, whose reports contain the statistics regarding the physical property.

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B. From interest on loans and investments, rentals, and other income.

2. Operating expenses.
   (*a*) Maintenance of way and structures.
      (1) Repairs of roadway.
      (2) Renewal of rails and ties.
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   (*a*) Loans and bills payable.
   (*b*) Accounts payable.

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(*d*) Interest and dividends accrued.
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1. Length and characteristics of road (track, bridges, and structures).
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Taxes	Income from investments
Rental of tracks and terminals	
Interest on bonds	
Balance, being net income for the year carried to profit and loss account	
Total	Total

Profit and Loss Account

Dr.	*Cr.*
Dividend No.	Balance brought forward from previous year
Amount written off by vote of directors for	Net income for year
Sundry adjustments	
Balance carried down	
Total	Total
	Balance (surplus) carried to general balance-sheet

General Balance-Sheet

Dr. ASSETS.	*Cr.* LIABILITIES.
Railroad franchises and other property	Capital stock
Expenditures for construction and equipment during current fiscal year:	Funded debt
Improvements	Replacement and renewal reserves
Extensions	Accrued taxes
Equipment	Interest on funded debt
Other capital asset accounts	Accounts payable
Securities in treasury	
Material and supplies	
Accounts receivable	
Other current asset accounts	
Cash on hand and in bank	Profit and loss: Surplus
Total	Total

A part of the annual railroad report is usually devoted to an explanation and discussion by the president of the important changes during the year covered by the report as regards traffic and earnings, construction, improvements in track, structures and equipment, the stocks, bonds, dividends and securities of the company, the relation of the corporation to other companies, and such other subjects as are of special interest to the holders of the stocks and bonds.

The above tables should be used as an aid to the study of an annual report of some large railroad corporation.[1] If the report is a detailed, comprehensive, and systematic one, it will cover all the points contained in the tables; but there are many companies whose reports are incomplete, especially as regards the information concerning

[1] In studying a railroad report—and that is the only satisfactory text for the study of railroad accounts—the student will be assisted by the analysis contained in Mr. Woodlock's little book The Anatomy of a Railroad Report. Chapter VI of Corporation Finance, by Thomas L. Greene, will also be helpful.

the physical condition of the property. The object of some reports is to make the best possible showing for the company rather than to give the most accurate and lucid account possible, but such reports upon critical examination will be seen to be incomplete.

As the public nature of the service of transportation becomes more clearly recognized and the difference between the duties of the quasi-public railway corporation and those of the strictly private corporation is being brought into greater prominence by the rapid growth in the size of the railroad systems and in the increasing tendency for the traffic of large sections of the country to pass under the control of a single management, the demand for accuracy, completeness, and uniformity in railway accounts becomes stronger and more general. Public opinion does not justify a railroad corporation in making an inaccurate or otherwise misleading report for speculative purposes, and a company probably does itself more harm than good by putting out an inaccurate report.

The wisdom of uniformity in the accounts of all railroads is now as evident as is the necessity for accuracy, and the reasons are hardly less cogent. If all railroad reports are accurate, complete, and uniform, the directors and officials of each company can easily compare the results of their administrative policies with the results of those enforced by other companies. There is no stimulus to improvement equal to that which comes from comparison with others in the same calling or business. The investor, moreover, becomes able to act more intelligently when he is able, either personally or by the aid of an expert accountant, to judge of the merits and business efficiency of particular railroads with whose management he may not be familiar by contrasting its accounts with others whose affairs he may have intimate knowledge of or whose management is generally recog-

nized to be sound and conservative. Likewise from the standpoint of public supervision of railroads, uniform accounting is equally necessary. The chief purpose of Government oversight of transportation is to insure equity in charges, and the accounts kept by each company contain most of the information upon which a decision regarding the reasonableness of its charges must be based. Moreover, a charge by one company is frequently rendered equitable or inequitable by its relation to the charges exacted by other companies, and whatever facilitates accurate comparisons of the accounts of one company with those of other companies is an aid to the intelligent and effective supervision of railway management.

By the Hepburn act of June 29, 1906, railroads must keep their accounts uniformly and as prescribed by the Interstate Commerce Commission. For some time there had been an increasing uniformity because of the influences exerted by the Association of American Railway Accounting Officers, the Interstate Commerce Commission, and the Annual Convention of the National Association of the Railway Commissioners of the States. The fact that the railroad companies were obliged by law to make detailed and elaborate reports to the Interstate Commerce Commission annually and according to a form prescribed by the commission caused the companies to shape their accounts and reports according to the statistical requirements of the commission. The statistician to the Interstate Commerce Commission worked out the blanks to be filled in annually by the railroad in consultation with the accounting officers of the companies, and those conferences as well as the requirements of the commission promoted the adoption of uniform methods. Both the Interstate Commerce Commission and the Association of American Railway Accounting Officers

were represented in the Annual Convention of State Railroad Commissioners, the statistician to the Interstate Commerce Commission and the President of the Accountants' Association being members of the Standing Committee on Railroad Statistics.

The State commissioners require annual statistical reports from the railroads covering the mileage and business done within their respective States, and the Annual Convention of the Commissioners did much to give similarity if not complete uniformity to their annual reports, and thus exercised an influence upon the railroad companies to adopt uniform methods of keeping their accounts.

Uniformity in railroad accounting was finally recognized to be necessary, and was made obligatory by Congress in the Hepburn law providing for the Government supervision and auditing of railroad accounts. In taking this action Congress did much to strengthen the Government supervision and effective regulation of interstate and intra-state railroad companies. There was a strong precedent for the public inspection of railroad accounts in the examination and auditing of the books of the national banks, and the decision as to whether the Government should or should not exercise this authority with reference to the affairs of the railway was more a question of expediency than of principle.

The investigations of the Industrial Commission convinced that body of the desirability of Government auditing of railway accounts, and it recommended to Congress the establishment of a permanent corps of expert auditors with complete authority, under the supervision of the Interstate Commerce Commission, to examine periodically the accounts of all railroad companies, whether operating or financial in their character, in order to secure publicity in respect of financial and operating

facts. Such examinations for detection of violations of law or for statistical returns were to be subject to provisions safeguarding confidential information similar to those prevailing in the case of the inspection of national banks.

By Section 20 of the act of February 4, 1887, "to regulate commerce," the Interstate Commerce Commission was given discretionary power of prescribing for all interstate railways "a uniform system of accounts and the manner in which such accounts shall be kept," but the law did not give the commission definite authority to inspect and audit the accounts, and without that power the law could not be enforced. The Interstate Commission did not attempt to enforce the uniform accounting until the Hepburn act was passed. By that law Congress wisely decided to create and place under the administration of the commission a bureau of statistics and accounts, and establish the relation between that bureau and the railways that had existed between the Comptroller of the Currency's office and the banks.

Those who are opposed to extending the regulative authority of the Government over the management of railroads did not favor a law requiring the adoption of a uniform system of accounts, because, in order to make such a law effective, it was necessary to provide for an inspection of the corporate accounts by public officials, and that was thought by some railroad interests to be unwise. In practice the law is working very well.

Railroad Statistics

The statistics compiled in regard to railroads are detailed and voluminous, and necessarily so. Each company depends upon its statistical records and data for the information essential to the administration of its several

departments; the National and State governments must be well informed concerning the railroads in order to legislate intelligently regarding public supervision and to enforce wisely the laws affecting the railways.

There are five general sources (besides many minor sources) whence one may secure statistical information regarding railroads. The annual reports of the companies give the data for each company separately. These reports are annually published, in an abbreviated form, in Poor's Manual of Railroads, which excellent volume also contains an analytical summary aggregating the statistics for all the roads in the United States, and making comparisons with the figures for past years. Most of the States and Territories annually collect and publish statistics covering the roads within their respective boundaries; but while these local compilations are of value to the States and Territories in levying taxes and regulating transportation, they are not much consulted by the public generally, because the comprehensive statistics to be found in Poor's Manual and in the publication of the National Government are more satisfactory for reference.

The national censuses of 1880 and 1890 covered the statistics of railroads and other transportation agencies, but the census of 1900 did not include the data regarding steam-railroads. This omission was made because it was thought that the compilation of census statistics of railroads could do little more than duplicate the statistical work of the Interstate Commerce Commission. If there were no decennial volume to show the railroad progress from 1890 to 1900, it would be unfortunate; but the regular annual reports of the Interstate Commerce Commission compare the data for the current year with those for each of the preceding ten years.

The annual volume published by the Interstate Commerce Commission, entitled Statistics of Railways in the

United States, contains six lengthy tables showing for each road in the United States, and for all the roads in the aggregate, the mileage, capital, earnings and income, general expenditure, charges against income, and a general balance-sheet for the year with comparisons with the previous year. The elaborate tables are preceded by an analytical report of the statistician to the commission, in which are contained, together with the explanatory text, condensed tabulations summarizing the large tables. In this introductory report by the statistician may usually be found all the figures desired by the general student of railroad transportation.

Although the present statistics of transportation seem comprehensive, there are some regrettable omissions of desirable and valuable data. The most serious defect is the neglect to collect annual statistics of the business done by carriers by water, along the seaboard, by telegraph companies, and by all corporations other than railroads engaged in the transportation of interstate commerce. In addition to collecting the statistics concerning railroads, the Interstate Commerce Commission should have the power and duty of gathering and publishing the statistics of inland navigation. As the statistician to the commission says in his report for 1900, "the jurisdiction of the commission must be extended to these agencies of transportation, so far at least as annual reports are concerned, before it is possible to render a comprehensive report upon interstate traffic." In order for Congress to act intelligently in making appropriations for rivers and harbors, in regulating or not regulating the business of the great telegraph companies, annual statistical compilations are indispensable. In some measure the need for information has been supplied by the decennial censuses, but only very partially supplied, not only because of the infrequency of the census compilations, but more because the census

statistics are unavoidably defective and inaccurate. Systematic records and frequent reports on the part of carriers are the only basis for accurate Government statistics, and it will not be possible for the Government to secure full and reliable statistics of interstate transportation until it requires all carriers engaged in that transportation to keep faithful records and make regular reports.

The statistics of railroad capital as now published are not altogether satisfactory, because only the nominal or face values of the stocks and bonds are given. As was explained in the chapter on Capitalization, there is frequently a wide discrepancy between real and face values of railroad securities. The capitalization statistics we now have do not inform us how much has been spent on the construction of the roads nor the amounts contributed therefor by individuals and by the National, State, and local governments, nor the present value of the railroads. It would be impossible now to secure the data necessary to make up these deficiencies, but something might be done year by year to give greater value in the future to the statistics of capitalization. The false impression now given by the figures for total capital (face value of stocks and securities) might be corrected to some extent at least by a table showing in parallel columns the market value and par value of such securities as are listed in the market.[1] The English reports have a feature worth copying. They show, year by year, the increase in capital account that is real and the increase that is nominal

[1] In response to a resolution of the United States Senate, as was stated above in Chapter VII, the Interstate Commerce Commission made a report, February 24, 1903, comparing the par and market values of railroad securities for the year ending June 30, 1900. The report presents clearly the difficulties encountered in securing, even with only approximate accuracy, the market value of all the securities of American railroads. Although the report does not cover all securities, the data contained are instructive.

or due to conversions and consolidations. These two changes in the present statistical tables would give the public a better measure than it now has of the actual value of railway property, and would indicate more definitely the amount of capital being invested in such property.

The value of freight traffic statistics would be enhanced by giving separately the figures for intrastate and interstate traffic. Such a classification would be serviceable in connection with questions of taxation and State control. The railroad companies have nothing to gain by making the classification into State and interstate business, and, as it would involve some expense to them, they naturally would not favor going to the necessary labor and cost. It would, however, be comparatively easy for the companies to compile the statistics on this basis from the way-bills.

Statistics of the ton mileage of each of the leading commodities shipped by rail would be instructive both to the public and to the companies, but until less expensive methods of railway auditing have come into general use commodity ton-mileage statistics would involve more labor and expense than the Government would be justified in requiring the railroad companies to expend. The publication of such statistics year by year would show the localization of industries in various parts of the country, indicate the trend of traffic from one kind of commodity to another, and show the companies what kinds of traffic were developing slowly and what rapidly. Such information would assist the companies in their efforts to promote traffic, and would furnish the Government with data bearing upon the reasonableness of rates. It is not improbable that electrical computing and tabulating machines may so reduce the expense of statistical work in the near future as to enable the rail-

road companies, without seriously burdening themselves thereby, to enlarge very considerably the present scope of railway statistics.

The development of the Department of Commerce and Labor, established in 1903, will probably cause the collection and compilation of the statistics of transportation and commerce to be somewhat enlarged and systematized. The statistics of ocean trade, which are now confined to our international commerce, will, it is to be hoped, be made to include our coastwise maritime commerce. Statistics of inland navigation and of all transportation businesses should be compiled either by the Department of Commerce or by the Interstate Commerce Commission. It would probably be best to place the work of securing statistics of all transportation companies—rail and inland carriers by water—with the Interstate Commerce Commission, because it is probable that by so doing the published statistics of interstate traffic as a whole would be more systematic, more comprehensive, and better correlated than they would be if their collection was put in charge of two independent authorities.

REFERENCES FOR FURTHER READING

WOODLOCK, T. F. The Anatomy of a Railroad Report and Ton-Mile Cost. Rev. ed. [This little book should be read in connection with the above chapter.]

GREENE, T. L. Corporation Finance, chap. vi, 1897.

JOHNSON, E. R., and WEYL, W. E. The Statistics of Transportation. Publication of the American Economic Association. New Series, No. 2, pp. 246–256, March, 1899. [This is one of the papers in a volume on the Federal Census.]

POOR, H. V. Manual of Railroads of the United States.

Statistics of Railways in the United States. Annual Report of Interstate Commerce Commission.

EATON, J. S. Railroad Operations and How to Know Them. 1900.

KEISTER, D. A. Corporation Accounting and Auditing, fifth ed., 1897. [This book is a "treatise on higher accounting designed

for the use of accountants, auditors, bookkeepers, financial experts," etc., and will especially interest those who wish to make a special study of accounting.]

WHITEHEAD, H. C. The Railway Auditor: An Outline of the System of Railway Accounting. A pamphlet of 42 pages, published by the New York University School of Commerce, Accounts, and Finance, Washington Square, New York, 1902.

Senate Document 178, Fifty-seventh Congress, Second Session. [Report made, February 24, 1903, to the Senate by the Interstate Commerce Commission comparing the par and market value of railroad securities for the year ending June 30, 1900.]

Accounting Series, Interstate Commerce Commission, Division of Statistics and Accounts, 1907 and 1908. [This series is made up of circulars describing the system of uniform accounts prescribed by the Interstate Commerce Commission under the act of June 29, 1906.]

PART III

THE RAILWAYS AND THE PUBLIC

CHAPTER XV

INTERRAILWAY RELATIONS

I. *Railway Competition and Agreements to maintain Rates*

Railroad corporations are creatures of the state, instituted to serve the public for the state and under its supervision. The service performed by the railroads has two characteristics of special significance: (1) It is of a *public nature*, and may be performed directly by the government or by means of an agent authorized by the state. Whether this service shall be conducted by the government or by its creatures is a question of expediency which is decided differently in different countries; but in whichever way this question may be determined, the service as a whole, and in its several branches, has close relationship with the government. (2) Within each part of the service—railroad transportation, the mail service, the express business, etc.—there must be *unity of action* extending over wide areas. The several transportation agencies within a nation's territory must work together if the public is well served; indeed, an international cooperation of carriers has been found advantageous. If the government directly conducts each branch of the service, unity of action within its boundaries is assured, and the question of cooperation becomes one of securing the proper international relations; but if the state delegates a branch of the service, as, for instance, railroad transportation, to a number of corpora-

tions, a large measure of cooperation among those companies is necessary.

The railroad service within the United States being performed by numerous corporations, these several organizations are brought into relationship with each other in two ways: as cooperators and as competitors. They are cooperators because a part at least of the persons and things each company transports moves over a wider territory than is served by the company's system of lines. All companies have more or less "through traffic"—that which they receive from other railroads or turn over to another connecting line. American railroads are rivals because in most sections of the country much of the traffic has the choice of more than one route. The territorial grouping of systems described in the chapter on the present Railroad System of the United States has not yet been completely worked out; and if it were fully accomplished, there would be much traffic inbound and outbound between the interior and seaboard of the country that could choose between the ports of two or more sections. The east-bound traffic from the Mississippi Valley, for instance, can leave by way of the Gulf, the southern Atlantic, the middle Atlantic, the New England, or the St. Lawrence ports. Likewise the west-bound traffic from the middle section of the United States has the option of many routes. The nature and scope of interrailway competition will be discussed more fully in a later connection. It assumes many forms, some of which are less obvious than those just cited.

Such being the conditions under which the railroad companies perform their transportation services, an understanding of interrailway arrangements is requisite to a clear knowledge of the relations, actual and ideal, of the railroads to the public they serve, and to the Government from which they receive their authority to engage in

the business of public carriage, and to which they are accountable for a proper performance of the service they have undertaken to render.

The extensive railroad systems of the present time are of comparatively recent growth. During the first two decades of railway history the lines controlled by even the larger companies were short, a road 200 miles in length being considered a long one. It was not until after 1850 that a length of 500 miles was reached by any system. The Illinois Central, constructed in the fifties to a length of 700 miles, was one of the longest roads in the world. The Pennsylvania, by construction and purchase, and the New York Central by consolidation, passed the 500-mile limit in the fifties; but it was not until after the civil war that a length exceeding 1,000 miles was attained by any system. Before 1890 a maximum of 5,000 had been reached, and since then the process of consolidation has given each of several companies the ownership or control of more than 10,000 miles of road.

Interrailway arrangements for handling through passenger or freight traffic were but little developed during the first twenty-five years of railway construction. Each company, as far as possible, kept its rolling-stock on its own lines, and compelled passengers to change and freight to be transferred when the points of junction with other roads were reached. A traveler may now go from the Atlantic seaboard to St. Louis or even to San Francisco without change of cars, but as late as in the fifties he had to make seven changes in getting from the Atlantic to the Mississippi. The conditions under which the through freight and passenger traffic was conducted before interrailway facilities were developed are described in a statement made many years since by the secretary of the New York Central. Speaking with reference to

the situation before 1851 on the roads now composing the New York Central route, he said:

"We had the roads between Albany and Buffalo. There was just about as much efficiency in operating ten roads as there would be in ten men trying to do a thing that one ought to do. Every board of directors had its own profit to make and its own schemes to advance. There was no obligation on the part of any one company to do anything for any other. Through lines of cars could be run only by very complicated and embarrassing arrangements. I can remember the time when conductors were changed at the end of each one of the roads of the old line between Buffalo and Albany. In some cases a ticket could not be bought through from Albany to Buffalo. The elements of usefulness and economy were very few. In regard to freight, there was no obligation on the part of any one of the roads to take a single pound of it from another. Except so far as they might agree with each other, it involved changing at each terminus." [1]

Frequent transfers were a deterrent to travel and a much more serious hindrance to freight traffic. The handling of freight several times *en route* consumed time, increased the liability of damage in transit, and made the costs of transportation so high as to restrict long-distance shipments mainly to nonperishable commodities of relatively high value. These obstacles to travel and freight traffic were removed in part by the consolidation of the short connecting lines, and to a greater extent by means of the express companies, "fast freight lines," and "palace-car" companies that have already been described. The amalgamation of the short lines began in a small way in the first decade of railway development, but was

[1] Windom Report of 1874, Evidence, p. 157. Senate Report 307, First Session, Forty-third Congress.

not actively carried on until after 1850, or during the third and subsequent decades of the growth of American railways. The express companies date from the forties, the fast freight lines, or freight despatch companies, from the fifties, and the sleeping-, dining-, and parlor-car companies from the sixties. These companies were all separate from the railroad companies at the beginning, and the express and "palace-car" companies have remained independent, but the freight despatch companies, as has been noted, have with few exceptions become the cooperative fast freight lines, which are in reality a part of the freight-traffic departments of the railroad companies.

These facilities for handling through or joint traffic established a greater degree of cooperation among connecting carriers and enhanced the ability of rival lines to compete for business free to move over more than one route. Indeed, the consolidation and cooperation of connecting roads so intensified competition as to give to the interrailway relations for the promotion or restriction of competition far greater prominence than those have which are concerned with arrangements for joint traffic.

The construction and consolidation of railroads in the fifties by which trunk lines several hundred miles in length were established increased the competition among carriers, especially for the traffic between the central West and the Atlantic seaboard. In the early fifties four lines—the New York Central, the Erie, the Pennsylvania, and the Baltimore and Ohio—were bidding for Western business, the two former lines connecting the seaboard with Lake Erie, the latter two the seaboard with the Ohio River, and the intensity of this competition soon became a matter of concern to the companies. They were able, however, to keep their rivalry under fair control until about 1870.

The five years preceding the panic of 1873 were char-

acterized by great activity and much speculation in business, and this activity was especially manifest in railroad construction. New lines were projected both into new sections and into territory served by roads previously built. Some roads were constructed for the speculative purpose of being sold out by their builders to the old companies whose traffic was threatened. Although the subsequent development of the country has been such as to create a need for most of the roads built during this period and during the later periods of active railroad construction, the speculation in railroads that preceded the panic of 1873 was excessive and was one cause of the intense rivalry of the railways during the succeeding twenty years.

The contest was keenest among the railroads connecting the Mississippi Valley with the Atlantic. In 1869 the New York Central and the Pennsylvania secured control of the roads connecting their Western termini—Buffalo and Pittsburg—with Chicago, and a struggle at once ensued for the possession of the east-bound and west-bound traffic between Chicago and the seaboard. In 1868 the rates from Chicago to New York were $1.88 per hundred pounds, first-class, and 82 cents fourth-class; but in 1869 a "rate war" carried the rates for a time to 25 cents a hundred for all classes. Such a low rate as that could not long be maintained without bankrupting the roads, and the charges were raised to a profitable basis within a few months. But the published rates on the through traffic were seldom the ones actually charged for any length of time. Rates fluctuated greatly and were secretly reduced for individual shippers whenever such action was thought to be necessary to prevent traffic from going by a rival route.

The situation in the territory of the "trunk lines" was made still more unsettled and uncontrollable in 1874

by the extension of the Baltimore and Ohio to Chicago, and the opening of the Grand Trunk route from Milwaukee *via* Detroit and Montreal to Boston. The New York Central and the Pennsylvania tried to maintain rates, but the Grand Trunk, the Erie, and the Baltimore and Ohio each preferred to act independently. As soon as the Baltimore and Ohio reached Chicago it began by open and secret methods to divert traffic from the Pennsylvania lines. The Grand Trunk and the Erie, whose financial management was highly speculative, charged whatever rates the exigencies of competition suggested. By the latter part of 1875 the through rates on all the trunk lines were well-nigh demoralized. In December of that year a truce was agreed upon, but it proved but temporary. For eight months of 1876 a violent rate war prevailed, and the rates charged were often not sufficient to cover the costs of operating the trains. By the end of the year the finances of the roads had been so depleted that peace was a necessity, and in 1877 they succeeded in reaching an agreement to share the total through traffic according to stipulated percentages.

The north Atlantic ports reached by the trunk lines—Baltimore, Philadelphia, New York, and Boston—prospered or declined commercially according to the amount of traffic secured by the railroad of which the city was the terminus, and so the contest between the railroads was intensified by the struggles of rival cities. The merchants of New York thought the rates to and from the West should be the same for Philadelphia and Baltimore as for New York, and less for New York than for Boston; but the merchants of Boston, Philadelphia, and Baltimore thought otherwise. The unregulated competition of the trunk lines and the protracted rate wars were detrimental to the trade of New York, largely because the traffic that had previously moved by the Erie Canal,

and thus to New York, was secured by the railroads and distributed among the other Atlantic ports. As long as the canal rates were considerably lower than the charges by rail the commercial superiority and progress of New York were assured; but the diversion of the canal business to the railroads threatened to check the advance of the trade of the city. The New York Central tried to hold the trade of New York by meeting the rates of the ambitious and reckless rival lines that were striving to build up the trade of their termini. The situation of 1876 was almost as burdensome to the business interests of the several Atlantic seaports as it was to the railroad companies, and they welcomed the settlement of the rate war. The rival claims of the cities as to the rates were adjusted by a compromise which gave New York and Boston the same rate, Philadelphia a slightly lower one, and Baltimore one somewhat less than Philadelphia received. The "differential" rate, as it was called, that was finally agreed on in favor of Philadelphia as compared with New York was two cents less a hundred pounds on sixth-class freight. The corresponding Baltimore differential was three cents less a hundred, with a proportionately larger differential for the higher classes of traffic. This compromise was regarded by New York as a concession. The merchants of that city were not, nor have they since been, satisfied with the adjustment of the rates then made.

The competition among the railroads in the West and in the South, though less intense, was similar to that among those in the northeastern part of the United States. In the central West the most important lines converged at Chicago, with which point St. Louis, Kansas City, Omaha, and other cities had each been connected in 1870 or soon thereafter, by two or more rival routes. There were three lines between Chicago and St. Louis in 1870, and later others were constructed. The through traffic

of the Western roads generally was eagerly contested for, and the rates fluctuated violently. In the Southern States the railroads ran from the interior regions of production radially to the ports of the Atlantic and Gulf seaboards and to the markets of the Northern States. There was competition among the railroads to secure as much business as possible for their respective ports, and an active general competition between the railroads and the numerous water-routes. Traffic between the Northeastern and Southern States might be shipped coastwise or by rail; that between the States north of the Ohio River and those of the lower Mississippi Valley by the Mississippi and its tributaries or by the railroads; while the many streams of the South were highways much used in moving traffic to and from the seaboard. Under these conditions the maintenance of published rates on through rail traffic was impracticable until a way was found whereby the railroad and steamship companies could work together in making rates and dividing up the total business. A plan of united action was developed and inaugurated in 1875.

In order to understand why the railroad companies find such difficulty in maintaining their rates and why they carry their rivalry to such extremes, one needs to consider the nature of railway competition. The merchant or the man who has invested capital in a business from which the invested capital can be withdrawn without much loss will suspend his business temporarily or permanently if competition becomes so severe as to prevent him from earning profits. As Professor Hadley says: "If Grocer A sells goods below cost, Grocer B need not follow him, but simply stop selling for the time. For (1) this involves no great present loss to B. When his receipts stop most of his expenses stop also. (2) It does involve a present loss to A. If he is selling goods

below cost, he loses more money the more business he does. (3) It can not continue indefinitely. If A returns to paying prices, B can again compete. If A continues to do business at a loss, he will become bankrupt, and B will find the field clear again." [1]

The situation is very different with competing railroads. The railroad company can not suspend business when competition forces down the rates, although the earnings may not yield any profits on the capital invested. And this is so because fully three-fourths of the expenses will continue even if the railroad ceases to carry traffic. Very little of the capital invested in a railroad (and the same is true in a large measure of mining enterprises and the iron and steel industries) can be withdrawn. When put into a railroad, capital must secure an income from that form of investment, or become worthless; so if the company stops doing business, no interest on the investment can be obtained. But more than this, the railroad company's expenses for maintenance and repairs, and its losses from deterioration of equipment, road-bed, and structures do not stop when traffic is suspended. About all a railroad company can save by suspending all traffic is the expenses incurred in operating the trains. Such being the case, a railroad will not surrender its traffic to a rival, even though the earnings are so small as to leave no surplus to pay interest on capital. As long as the receipts from traffic will cover operating expenses and yield a small amount in excess to apply to the payment of expenses that must be met whether business is being carried on or not, the railroad will seek to hold its traffic against its competitors, or endeavor to secure the business being handled by its rivals.

Unless a railroad is exceptionally strong financially,

[1] Railroad Transportation, p. 73.

it can not carry a large share of its traffic at rates but little above the costs of operating the trains without becoming bankrupt; but the insolvent railway does not cease to do business. It will continue to be operated either by its former owners or those who may purchase it, and while it remains in a condition of insolvency it is apt to seek competitive traffic more eagerly than its solvent rivals can do with safety. While bankrupt, the road is not obliged to pay interest or dividends on the capital invested, and while temporarily freed from that obligation there is a strong temptation to secure new patronage and additional tonnage. Insolvent roads have frequently yielded to this temptation and have made reckless wars upon their rivals, regardless of their obligations to treat the public without unjust discrimination and their competitors in accordance with business ethics.

But whether solvent or bankrupt, every railroad has a strong incentive to enlarge its business, because an increase in traffic does not correspondingly add to the expenses. After a railroad has been constructed, equipped, and put into operation most expenses are independent of the volume of traffic. Just as the expenses are not much lessened by a decrease in business or a suspension of operations, so are they enhanced to a comparatively small extent by an increase in the traffic. Until the point is reached when the facilities of a railroad are fully utilized, the greater the volume of business done the less the costs per unit of business (per passenger mile or ton mile), and the higher are the profits. The railroad business is one of increasing returns. A company with a traffic of 1,000,000 tons annually will much more than double its profits by carrying 2,000,000 tons, provided the extra business can be secured without reducing the rates, and if a considerable reduction in rates should be necessary to secure the additional traffic, the com-

pany will probably add to its profits by taking the extra tonnage.

Such being the nature of competition in railway affairs, some means for regulating its action are necessary if the service of railroad transportation is to be performed with profit to the companies having it in charge, and in accordance with the best interests of the public. If interrailway affairs were controlled by forces similar to those governing the business relations of persons engaged in agriculture or merchandising, their regulation by unrestrained competition might be satisfactory; but experience has clearly shown the absolute necessity for cooperation among carriers in the management of their competitive as well as their joint business. Unbridled competition is intolerable alike to the railroad companies and to the public, and must of necessity be checked. Whatever is ruinous to all parties must be stopped, and if the ruinous practises have no natural limits, an artificial one must be established.

If the competition among rival railways is to be restrained, they must either cooperate or consolidate. If they can not agree upon, and work in accordance with, business methods that will effectually restrain the forces which lead to ruinous competition, they must consolidate under a single ownership or a common control. There is no other alternative.

An agreement for the restraint of competition may be for the accomplishment of one or more of four purposes: (1) The agreement may be to maintain rates, each party to the agreement being free to secure as much business and as large earnings as can be obtained at the rates sanctioned by the compact. (2) The agreement may divide the competitive traffic among the interested roads, according to stipulated percentages. (3) The agreement may allow each road to secure as much as possible of the

competitive business, but require the total earnings of all the lines from that traffic to be divided according to agreed ratios. (4) The company may decide to divide up the field, each company receiving a section of country within which it is to conduct its business unmolested by the other parties to the agreement.

The first form of agreement is the easiest one to adopt, and was the one first employed by the railroads to regulate their competition. The second and third forms of agreements are called pooling, and for many years pooling arrangements were a part of all the cooperative agreements of rival railroads. A division of the field can scarcely be accomplished to much extent by formal agreements, but must come about mainly as the result of the growth of large systems of roads. As was noted in Chapter V, a grouping of the railroads of the United States is in progress that promises eventually to divide the country into a limited number of sections, the railroads in each section being under a single control.

When competition for long-distance traffic became active in the early fifties, the necessity for agreements to prevent the cutting of rates secretly and to secure stability in charges became apparent. In the report of the Pennsylvania Railroad in 1855, the president, J. Edgar Thomson, stated that "with a view to agreeing upon general principles which should govern railroad companies in competing for the same traffic and preventing ruinous competition, a free interchange of opinions took place during the past year between the officers of the four leading East and West lines, and also with those of their Western connections." The traffic for which this "ruinous competition" was then being indulged in was quite as much the west-bound passenger business as the east-bound freight tonnage. Later the freight business became the main object of competition.

This conference did not secure harmonious action. In 1857 the New York Central and the Erie engaged in a severe struggle for control of the passenger travel between New York and Lake Erie. This struggle was followed by an agreement signed by the presidents of the four trunk lines "for the purpose," as President Thompson stated in his report of 1858, "of agreeing upon remunerative rates, abolishing injudicious practises, and effecting a harmony of purpose conducive to the mutual advantage of the railway interest and the public." The agreement, among other things, named a person to act as umpire for the adjustment of differences among the parties to the compact.

Agreements similar to this were entered into frequently and openly by the railroad companies in different parts of the United States during the fifties and sixties, the officers which convened to make the agreements usually being the general freight-agents. However, these pledges of the officers of the competing lines failed to secure stable rates. Sudden and extreme fluctuation characterized competitive charges, and it was evident that some more effective arrangement was needed.

In the summer of 1874 Commodore Vanderbilt, the president of the New York Central, conferred with representatives of the Pennsylvania and Erie Railroads at Saratoga, and they agreed upon a board of arbitration to settle disputes among their roads. Their idea was to agree upon rates as formerly and also to establish a central board with power "to establish rules and tariffs which should be binding upon the various companies, and this central board it was intended should be clothed with sufficient powers to hold the companies firmly. It was an attempt to substitute arbitration among railroads for a condition of perpetual warfare." [1]

[1] Charles Francis Adams, Railroads: Their Origin and Problems, p. 153.

Whether this plan of cooperation would have succeeded had it been given a trial is doubtful; but it was not given a trial because it was not acceptable to the Baltimore and Ohio and the Grand Trunk, the two trunk lines that had just secured Chicago connections and were desirous of securing the maximum amount of competitive traffic. The Saratoga Conference raised a great storm of popular opposition to the railroads, because the public thought the railroad presidents had conspired to create an oppressive monopoly; but it had no effect in checking interrailway contests. The disastrous rate wars of 1875 and 1876 followed.

The agreements to maintain rates failed, because there was no authority to enforce their observance, and the incentives to break the contract were always strong. The rates were decided upon by the higher officials of the companies, and they or their representatives agreed to maintain the rates thus established; but as soon as any company suspected another of violating the agreement, it would authorize its subordinate officials or the soliciting agents "to do as others are doing or supposed to be doing." Railway managers saw clearly that the only way to maintain rates upon traffic for which several independent railroads were competing was to remove the inducement to cut the rates. They sought to accomplish this by means of pooling.

CHAPTER XVI

INTERRAILWAY RELATIONS—(*CONTINUED*)

II. *Pools and Traffic Associations*

The main purpose of pooling was to prevent the cutting of rates and fares—the establishment of conditions that would enable the railroads to enforce their agreements as to charges. The pools were agreements among railroads whereby their competitive traffic or the receipts from that traffic were divided among the companies according to stipulated ratios. Arrangements for the division of the business were called traffic pools, those for the distribution of the receipts money pools.

The arrangement effected by a freight-traffic pool is theoretically simple. The roads that have been competing for some time for traffic free to choose its route observe what share of the total traffic, under normal and peaceful conditions of rivalry, is carried by each line, and make an agreement guaranteeing that each road shall carry during the period of the contract the percentage of the total tonnage to which past experience has shown the road to be entitled. If a road while a member of the pool does not receive its stipulated share of the total tonnage, the organization having the management of the pool in charge sees that tonnage is diverted from the roads receiving more than their allotted percentage to the line having a tonnage deficit. In order to make a traffic pool effective, the railroad companies, instead of

the shippers, must determine the route by which a part of the traffic shall move. Usually shippers object to surrendering their right to determine the route by which their goods shall be taken, and, although the companies always receive a considerable tonnage of unrouted shipments, the railroads have more often preferred to allow each road in the pool to accept and forward the tonnage offered to it, and to divide among each other the receipts from the traffic rather than the tonnage—i. e., to establish a money pool. The money pool, furthermore, is applicable to the passenger business as well as to freight traffic.

In pooling their earnings from competitive business, it is customary for each road to retain a third or a half of the revenue it derives from that traffic, and to turn the remaining two-thirds or half into the pool (or joint purse, as it is called in England), to be distributed periodically among the pooling lines in accordance with the percentages stipulated in the agreement. Each road is allowed to retain a part of the earnings to cover the actual expense of conducting the transportation affected by the pool, and the percentage withheld from the joint purse must be small enough to remove the inducement to attempt to capture traffic from competitors. At one time the pooling agreement of the Southern Railway and Steamship Association required 80 per cent of the receipts to be paid into the pool.

A railroad company naturally dislikes to surrender any of its receipts, because to do so seems like giving a part of its earnings to a rival; consequently the enforcement of the pooling agreement has not always been easy. This difficulty has been in some degree obviated by the practise of requiring each member of the agreement to leave on deposit in the pool at the time of each periodical distribution of the pooled earnings a balance sufficient to

cover any payments that will probably need to be made to its competitors.

By arrangements such as may be established by the pooling of traffic or earnings it is possible to prevent a railroad from deriving immediate profit from secretly cutting rates or openly engaging in a rate war; but the temptation for a road to increase its percentage of the total traffic carried by all lines is not wholly removed. The pooling contracts are for a short period of a year, or, at most, a few years, and every road desires to secure as large a tonnage as possible in order that it may share more largely in the subsequent allotment of percentages. The pool does not altogether destroy competition. Even if published rates are fully maintained, there is bound to be a rivalry in service, each road endeavoring to secure the largest possible volume of business.

Professor Hadley states in his Railroad Transportation that "the earliest railroad pools were probably developed in New England, but they were on a small scale, and the whole thing was often so quietly done that their very existence was almost unsuspected." So little is known of the history of these New England pools it is probable that they were not important. The first pooling arrangement of much consequence was established in 1870 by the railroads connecting Chicago and Omaha—the Northwestern, the Rock Island, and the Burlington roads. These three lines, having about equal facilities for handling the traffic between Chicago and Omaha, agreed that each route should have a third of the business. The charges by all lines were to be the same, and the traffic, without solicitation by the companies, was to take whichever route the shippers might decide to patronize. According to the first agreement, each road was to retain 45 per cent of the receipts from the through passenger business and 50 per cent of the earnings from the through

freight traffic; the remainder of the revenues from this competitive business was to be shared equally by the three companies. This agreement was maintained successfully for fourteen years, with the exception of a few months in the summer and early autumn of 1882, when a controversy regarding the distribution of freight brought on a rate war of a few months' duration. In 1884 the Chicago-Omaha pool gave way to a larger organization—the Western Freight Association.

Six years after the establishment of the Chicago-Omaha pool the Southwestern Railway Rate Association was formed to adjust the rates on traffic between Missouri River points and Chicago and St. Louis, and to distribute the earnings from that traffic among the several competing lines. One purpose of the association was to protect the grain-trade interests of Chicago and St. Louis from the consequences of unrestrained competition. The pooling agreement was similar to that of the Chicago-Omaha pool, except that there were more roads parties to the arrangement; but the operation of the larger association was not so successful. For a time the association acted as a clearing-house for the settlement of balances among the roads.

In addition to these two pooling agreements, numerous others were entered into by the railroads of the Central and Western States in the seventies and eighties, some of the agreements being in force only for a short time, others for several years. The traffic between Chicago and Milwaukee on the east, and St. Paul and Minneapolis on the west, was regulated by the Northwestern Traffic Association; the field between Chicago, Milwaukee, and St. Louis on the east, and Omaha and Council Bluffs on the west, was occupied by the Western Freight Association; to the south of this was the Southwestern Railway Rate Association just referred to. Among the

organizations having authority in the territory west of the Missouri River were the Colorado Railway Association, the Colorado-Utah Association, the Pacific Coast Association, and the Transcontinental Association.

The Chicago-Omaha agreement entered into by the Northwestern, Rock Island, and Burlington Railroads in 1870 was simply to establish a pooling agreement; but the organizations or "associations" subsequently formed by competing railways in the West and other sections of the country had other purposes and activities, although the pooling of traffic or earnings was their main object. In the traffic associations the railways attempted to regulate all their interrelations. They fixed the rates on joint and competitive business, laid down rules regarding the solicitation of traffic, took measures to prevent fraud, determined the speed at which the fast passenger-trains should be run, decided what kinds of tickets should be issued, and what privileges should be afforded or denied shippers. Until 1887 a pooling agreement was a regular feature of the organization of all traffic associations; since then pooling has been illegal, but the traffic associations have continued to exercise their other functions.

The traffic association was developed earliest in the States south of the Ohio and Potomac, where, in 1875, the Southern Railway and Steamship Association was formed under the masterful guidance of Albert Fink. This association grew out of pooling agreements, the first of which was entered into in December, 1873, by the four roads connecting Atlanta, Ga., with the seaboard. The pool covered only the cotton business of the roads. The membership of the association comprised the railroads in Virginia, North and South Carolina, Georgia, Tennessee, and Alabama, and the steamship lines connecting those roads with Baltimore and the other north Atlantic seaports. This was one of the best organized

and most effective traffic associations, and came later to include most of the territory east of the Mississippi River and south of the Ohio and Potomac. In its plan of organization provision was made for an annual convention composed of one delegate from each constituent company. This body had legislative powers; the administrative functions were exercised by a general commissioner, an executive committee which after 1883 consisted of the managers of the principal lines, and a board of arbitrators. The general commissioner was given large powers, and this was one reason why the organization proved effective. The questions the commissioner could not settle were referred to the Executive Committee, which had jurisdiction over the joint and competitive traffic. Its action had to be unanimous, and in case of a disagreement on any subject, that question was referred to the Board of Arbitrators for adjustment. The rates on competitive traffic were determined by the Executive Committee, which also apportioned the traffic among the competing roads. Each road carried the traffic coming to its lines, but paid a large part of its gross earnings from the competitive traffic (at one time 80 per cent) into the pool for distribution, according to the stipulated percentages. One useful feature of the association's organization was the clearing-house for the settlement of the accounts of the joint traffic.

Naturally the most difficult problems the association had to deal with were the allotments of traffic among competitors. These allotments covered different kinds of traffic, and affected several groups of roads and steamship lines, which were frequently changing their relative efficiency as carriers. Allotments were made annually, and usually were accepted by the interested companies, but not always, and local rate wars occurred from time to time. The local troubles, however, did not disrupt the

association, because the withdrawal of a member did not terminate the agreement among the others, and because the commissioner was given such power to discipline a recalcitrant line that he was usually able to bring it into subordination. Competition was active among the pooled roads, and between the carriers in the pool and those outside. Each member strove to increase its traffic in order to make as large a showing as possible when the annual allotments were made. The rates fixed by the association on most of the business into and out of the territory served by its members were influenced by outside competition. The rates between the north Atlantic ports and the South were affected by the charges made by sailing vessels. At that time the Mississippi River had a considerable regulative influence on rail rates. Furthermore, then, as now, every city was zealous in securing as liberal rates as possible as compared with its rivals. If any industrial or commercial center within the territory of the pooled lines were charged higher rates than its rivals without that territory, the city and the roads serving it were liable to lose their business, and care was taken to guard against such a result.

The competition among the railroads was heaviest in the territory between the central West and the North Atlantic seaboard, and greater difficulty was experienced there than in the West or South in making effective pooling agreements. The first agreement affecting competitive traffic in this field was one between the railroads mining and carrying most of the anthracite coal. In 1872 they entered into a contract restricting the amount of coal to be mined, and dividing up the production and traffic according to fixed ratios. This agreement lasted for four years, and was followed by others from 1878 on, which did something to steady the prices and output of coal, but which never fully accomplished the purpose.

Another, and a decidedly objectionable plan for regulating the competitive relations of the trunk lines was to make certain large shippers the "eveners" of the traffic of the rival roads. In applying this method of distributing business, the railroads first decided what share of the total tonnage should go to each line, and then arranged with large shippers to allot their freight from time to time among the several roads in such a way as to enable each route to secure its stipulated share of the total of all competitive traffic. The first eveners were the shippers of live stock from Chicago to the East, with whom the railroad companies made an agreement in 1875. The Standard Oil Company was another evener. These "eveners" were remunerated for their trouble by being given better rates than other shippers. The large shipper was favored at the expense of the smaller ones, and the discrimination was most unjust. The large shippers who acted as eveners were quick to take advantage of the situation. The railroad companies being unable to restrain competition, were willing to pay a large price for a peaceful division of traffic, and the concessions in rates demanded and received by the large shippers were excessive and ruinous to other shippers. In 1879—that is, when the trunk lines succeeded in pooling their eastbound business—the evener plan of distributing traffic was terminated. That, however, did not end the large shipper's opportunity to secure special favors. The problem of discrimination remained, and unfortunately is still present.

Three years of strife, much of which consisted of violent rate wars, followed the failure of the Saratoga Conference, then, in 1877, the necessitous condition of the trunk lines and the pressure of the commercial interests affected by the struggle caused the roads serving the north Atlantic ports to unite upon a pooling arrange-

ment. Albert Fink was called to their assistance, and in July an organization of the four trunk lines from the seaboard to Lake Erie and the Ohio River was effected. In December the roads between Pittsburg, Erie, and Buffalo on the east, and Chicago and St. Louis on the west (what is now called Central Traffic Territory) established a like organization. The organization in both cases consisted merely of an "executive committee," in which each road subject to the agreement was represented. Albert Fink was chairman of the Executive Committee of the Trunk Line Association.

Pooling was the main purpose of each organization. The apportionment of the west-bound traffic from New York was made in 1877; the New York Central and Erie were each to have 33 per cent, the Pennsylvania 25 per cent, and the Baltimore and Ohio 9 per cent. The pooling of the traffic eastward from Chicago was a more difficult task, and was not accomplished until 1879. In that year Albert Fink further developed the organization of the railroads between the central West and the seaboard by securing the establishment of the Joint Executive Committee, composed of representatives of the "Trunk Lines," from the seaboard to the Ohio and Lake Erie, and of their Chicago connections. This Joint Executive Committee was an organization similar to the Southern Railway and Steamship Association, but it did not give its chairman, Mr. Fink, as much authority as he had had as commissioner of the Southern Association.

The Joint Executive Committee endeavored to accomplish three things: (1) To fix the rates (or the "differentials") which Philadelphia and Baltimore should have as compared with New York and Boston on the Western business; (2) to apportion the total competitive traffic among the interested roads; (3) to have supervision

over the joint traffic shared by the roads east and west of Buffalo, Erie, and Pittsburg.

The first of these problems proved a most difficult one, and was never settled to the satisfaction of all parties. The compromise arrangement, described on page 220, probably dealt with the question as fairly as it is possible. Indeed, Albert Fink's report on Adjustment of Railroad Transportation Rates, made in 1882, showed clearly that the rates from the central West to each of the north Atlantic ports were at that time, and must be a part of the through rates from the central West to Liverpool and Europe, and that the rail charges to Philadelphia and Baltimore were as much less than those to New York as the ocean rates from Philadelphia and Baltimore to Europe were greater than from New York to Europe. The Legislature of New York State manifested its disapproval of the formation of the Joint Executive Committee, and of its settlement of the question of differential rates, by the appointment of a committee of investigation—the Hepburn Committee—whose investigations and report added much to public information regarding the railway problem in general, although it threw little light on the question of the effect of railway pooling on the business of New York State and city. The New York Central Railroad felt dissatisfied with the differential rates, and carried on a rate war in 1881, and another in 1884.

The second duty assigned the Joint Executive Committee—the pooling of east-bound traffic—was performed in 1879. To enforce the pooling agreements, and to supervise the business arrangements and rates affecting the joint business of the Eastern lines and their Western connections, a progressively efficient organization was developed. As reconstructed in 1885, the organization of the Eastern or "trunk lines" was a money pool governed by a com-

mittee of the presidents of the roads, to which appeal might be taken from the Executive Committee. A final appeal might be made to a permanent arbitrator appointed by the president's committee. The chief administrative officer of the organization was the chairman of the Executive Committee. As thus constituted, the organization gave promise of being able to maintain orderly relations among the carriers competing for the vast traffic moving east and west through the north Atlantic ports; but in 1887 the vitality of the organization was largely impaired by the law making illegal the pooling of freight traffic.

In the foregoing paragraphs an account has been given of the more important but not of all the railway pools that were organized in the seventies and eighties. In 1887 practically all the roads having a large volume of competitive traffic were members of some pooling organization. The interrailway relations were not altogether satisfactory, but the conditions, at least as far as the carriers were concerned, were improving. Progress was being made in regulating rate fluctuations and the consequent discriminations. It does not seem, moreover, that the pools were a detriment to the public. Although the rival railroads made their rates by joint action, and united to maintain the charges thus agreed upon, they were not able to control the industrial forces to which transportation charges are in a large measure subject. Nor was it possible for the railroads by means of rate agreements and pools to prevent the ocean, the large rivers, and the Great Lakes from exercising a wide and effective influence on rail rates. From 1870, when pooling began, to 1887, when it was prohibited by law, the average receipts of the railroads of the United States for hauling a ton of freight one mile declined from nearly two cents (in gold) to about one cent; in other words, the average ton-mile

earnings in 1887 were only a little more than half those of 1870. Charges did not decrease because of pools, but the pools did not prevent their decline.

Nevertheless, the public was strongly opposed to pools. The people generally thought that pooling enabled the railroads to establish monopoly conditions in transportation; indeed, the public opposition to railway practises (some of which were not objectionable) during the seventies and eighties centered against pooling. It can not be shown, however, that pooling enabled the railroads to fix their charges at will, and it is clear enough that discrimination in rates and fares rather than the cooperation of competing railroads was the central abuse.

Section 5 of the Interstate Commerce Act, passed by Congress in 1887, declares:

"That it shall be unlawful for any common carrier subject to this act to enter into any contract, agreement, or combination with any other common carrier or carriers for the pooling of freights of different competing railroads, or to divide between them the aggregate or net proceeds of the earnings of such railroads or any portion thereof; and in any case of an agreement for the pooling of freights as aforesaid, each day of its continuance shall be deemed a separate offense."

Previous to the passage of this law, similar action had been taken by several of the States, particularly by those in the central West, where the necessity for reforming the methods of railway management was most keenly felt, and this antipooling section of the national act was demanded by the members of the House of Representatives from the South and West. The Senate was not in favor of prohibiting pooling, but the House of Representatives insisted upon its being done.

In a certain sense pooling contracts had never been legal. The railroad companies did not commit an offense

by entering into a pooling agreement, but the contracts thus made could not be enforced by legal action, because the courts regarded them as being in restraint of trade. It is a general principle of common law that contracts in restraint of trade are void because they are in conflict with public policy. The sense in which pooling agreements were illegal before 1887 was clearly stated by Judge Cooley. "A contract," he says, "may be illegal in the sense that it is forbidden by a law which imposes some penalty for entering into it; or it may be illegal because, though not forbidden, it is considered to be of an injurious and demoralizing tendency, and therefore the law will not favor it, but will refuse to lend its aid in its enforcement. If a contract is only illegal in this last sense, parties are at perfect liberty to enter into it if they please, but performance of its conditions must be entirely voluntary."

Not being enforceable by legal procedure, the strength of the pooling agreement depended upon the honor of the members to the contract and upon the successful imposition of fines for a violation of its terms. Large use was made of fines to enforce the agreements, the collection of the fines being secured by requiring members to keep a considerable deposit in the pool. It is thought by many persons that railway pooling has never been given a thorough test in this country, because of the extra legal character of the contracts; but whether the pooling agreements would really have been more effective had they been sanctioned by law is uncertain. The pool was an agency by which the railroads sought to cooperate; indeed, it was in many respects the medium by which the rival companies sought to arbitrate their conflicting interests, and it is doubtful whether contracts for the promotion of those ends would have gained much strength from the sanctions and penalties of the law.

The prohibition of pooling in 1887 compelled a reorganization of traffic associations, but the necessity for cooperation required the continuance of the associations. The trunk lines signed new articles of agreement a few days after the interstate commerce law went into effect "for the purpose of facilitating the transaction and interchange of business with each other and with their connecting lines." The Grand Trunk was not a party to this agreement, and a serious rate war followed, the result of which was a new agreement in 1889, at which time the Grand Trunk became a member of the Trunk Line Association.

The Southern Railway and Steamship Association eliminated the pooling part of its organization, and continued to exist. By means of fines it was able to prevent serious rate disturbances until the business depression of 1893 came, when the struggle for traffic became so intense that the association was unable to control the action of its members, and the organization was terminated. Two years later the Southern States Freight Association was formed.

Rate wars prevailed generally west of Chicago in 1887 and 1888, and the railroad companies had great difficulty in forming organizations strong enough to prevent rate cutting and retaliation. The various associations that had existed previous to the prohibition of pooling were reorganized, and, in addition to the local bodies, the presidents of the interested roads, early in 1889, organized "the Interstate Commerce Railway Association," with the hope of exercising an effective control throughout the entire territory west of Chicago, with the exception of that served only by the Pacific roads and the international lines. This organization was a failure, as was also one which succeeded it, and it was not until January, 1891, when the Western Traffic Association was

formed, that the railroads composing the several traffic organizations west and southwest of Chicago were able to cooperate with any degree of success. The Western Traffic Association did not supplant the smaller organizations, but federated them by being a court of appeal in matters of rates and in other controversies. One of the most vigorous of the subordinate bodies was the Trans-Missouri Freight Association, whose history will be referred to in the next chapter.

The Pacific roads, including the Canadian line, organized the Transcontinental Association in 1888. The chief problem that body had to solve was the competition of the Canadian Pacific with the American lines. Differential and lower rates *via* the Canadian road were agreed to, but as this was not satisfactory to the Southern Pacific, the Transcontinental Association came to an end in 1892. The following year the three California lines established a Transcontinental Freight Rate Committee, which was in existence until 1897, when it gave place to the Transcontinental Freight Bureau, of which all the Pacific lines in the United States are members. This organization is still in existence.

The traffic associations thus reorganized endeavored to regulate the interrelations of rival carriers, but without much success. When the business depression of 1893 and the following four years caused railway traffic to fall off many roads became bankrupt and others were threatened with insolvency. The struggle for business became intense and ruthless, and discriminations were general. The regulation of competition by pooling was not permissible, but under the stress of circumstances the railroads sought to do secretly or indirectly what the law prevented them from doing openly. In justification of their action the railroad companies asserted that the law imposed impossible conditions upon them. However

that may have been, it is certain that the financial condition of the railways was most unsatisfactory from 1893 to 1897; that condition, however, was mainly the result of the speculative financiering of the preceding twenty years. The antipooling law was only one and a minor cause of their discomfiture.

CHAPTER XVII

INTERRAILWAY RELATIONS—(*CONTINUED*)

III. *The Present Situation*

THE methods by which the railroads attempted to regulate their competitive relations after pooling had been prohibited are shown in the agreements entered into by the members of the Trunk Line Association and by the roads which formed the Trans-Missouri Freight Association. Article VIII of the Trunk Line Association's agreement stipulated that "if the maintenance of uniform tariffs by all lines reduces the traffic of any party below a fair proportion of the traffic in competition, the tariffs may be so adjusted from time to time as to protect such lines from an unjust depletion of traffic, such adjustment to be made under the rules of this association." Likewise the articles of agreement of 1893 of the Central Traffic Association, of which also the trunk lines were members, contained the proviso that "whenever any party hereto feels that its traffic is being unjustly depleted, it shall represent the facts in writing to the commissioner, who shall promptly endeavor to secure to the parties hereto their fair shares of traffic." What was to be considered each road's "fair proportion" of traffic was not stated in the agreements, but in all probability there was a tacit understanding on that question.

The Trunk Line and Central Traffic Associations did not succeed in federating in an efficient common organi-

zation until the close of 1895. They had a joint committee before that date, but, unlike the Joint Executive Committee that had existed from 1879 to 1887, it had very little power. After making unsuccessful efforts to federate in 1892 and in 1894, they were brought together in 1895 by the stress of circumstances. Traffic was light, competition ruthless, rates were not maintained, and the securities of their companies were at a low ebb. The Joint Traffic Association, which took charge of the joint and competitive business of 32 roads in the Trunk Line and Central Traffic Associations January 1, 1896, was managed by a board of nine men representing the nine largest systems of roads. This board was responsible to the council of the presidents of the roads, and there was a permanent board of three arbitrators. The Board of Managers did not prescribe the rates to be charged by the several companies, but recommended the rates to be fixed by each road; but as the articles of association stipulated that "the failure to observe such recommendations shall be deemed a violation of this agreement," and as a violation of the contract was punishable by a fine of $5,000, or an amount equal to the gross receipts of the transaction concerned in the violation, the rates were in reality determined by the association. Likewise the traffic was apportioned among the competing roads by the organization. There was nothing specific in the articles of agreement regarding the allotment of percentages, but in 1896 an award of the arbitrators apportioned the traffic east-bound from Chicago among the ten interested roads.

The Joint Traffic Association lasted less than three years, and was brought to an end by a decision of the Supreme Court. Indeed, the United States commenced proceedings against the association immediately after its activity began, on the grounds that the organization

accomplished pooling, and was a violation of the Interstate Commerce Act, and that it was a combination in restraint of trade, and therefore contravened the Antitrust Act of July 2, 1890. In the lower courts the association won, but it lost in the Supreme Court, which based its decision mainly on the antitrust law, the court in 1897 having held that law to apply to railroad agreements to fix and maintain rates.

The decision of 1897 was in the case of the United States against the Trans-Missouri Freight Association. This association began April 30, 1889, and had supervision over the competitive traffic of 18 roads west of the Missouri River and the ninety-fifth meridian. The purpose of the organization was "mutual protection by establishing and maintaining reasonable rates, rules, and regulations on all freight traffic, both through and local." In 1892 action was begun in the United States Circuit Court to have the association dissolved on the plea that it violated the Antitrust Act. The Circuit Court and the Circuit Court of Appeals decided that this act did not apply to railroads, but the Supreme Court, on the 22d of March, 1897, held to the opposite opinion. By the act of July 2, 1890, "every contract, combination in the form of a trust or otherwise, or conspiracy, in restraint of trade or commerce, among the several States, or with foreign nations, is hereby declared to be illegal." Congress did not have railroads in mind in passing this law, but as railway combinations were not exempted by the terms of the law, the Supreme Court held that they came under the act if they effected a restraint of trade or commerce. The court also took the ground that an agreement among competing railways to maintain rates—although the rates in question were reasonable and lawful—was a restraint of trade, was contrary to public policy, and was a violation of the antitrust law.

The decision of the Supreme Court in the cases against the Joint Traffic and Trans-Missouri Freight Associations restricted the possibilities of lawful cooperation among independent railroads within very narrow limits. Before 1887 competing railways had been permitted to agree upon and to unite in efforts to maintain rates and fares on interstate traffic and to pool their business or its earnings; after 1887 freight pooling contracts were illegal, but rate agreements were considered lawful until 1897, when the Supreme Court held the law of July 2, 1890, to apply to railroads. Since then concerted action either in fixing or maintaining charges has been unlawful. The traffic associations lost their efficiency as regulators of interrailway competition in 1897 and 1898, and the railroads were obliged, if they observed the letter and spirit of the law, either to permit the return of unrestrained rivalry or to seek some other method than association for the control of their interrelations. One thing done by the railroads was to consolidate much more rapidly than they had ever done previously. The large systems became larger by the absorption of the smaller ones, and the systems thus enlarged further strengthened their power to act harmoniously by the "community of interest" principle of ownership and management.

The traffic associations were not abandoned. Their articles of agreement were so changed as to make them conform to the law—i. e., the functions of making and maintaining charges were left with the individual companies—at least theoretically and technically that was done. As a matter of fact, however, the railways must cooperate in a large measure in classifying traffic, in working out their schedules of rates, and in fixing the joint and competitive charges exacted for the performance of the vast and intricate service of transportation. Were each company to act solely for itself and without regard to the

classifications being followed and the charges being made by the railroads serving other centers of population and regions of production, the result would be intolerable discriminations and business conditions little less than chaotic. Indeed, it would be impossible for the railroads to observe the Interstate Commerce Act or any other law requiring them to exact of all persons and all places only reasonable and just fares and rates. And so to-day, while nominally each railroad must prescribe its own charges, its officials must confer with those of other lines regarding joint and competitive business and cooperate with them in making classifications and adjusting rates. The meetings of the traffic associations afforded the opportunity for such cooperation. These associations, moreover, now as formerly, concern themselves with numerous matters other than pooling and rate agreements, affecting the interrelations of railways. Indeed, the informal rate agreements decided upon at the meetings of these traffic associations have been so generally accepted by the constituent companies as to cause the Interstate Commerce Commission to assert in its report for 1901 "that the decision of the United States Supreme Court in the Trans-Missouri case and the Joint Traffic Association case has produced no practical effect upon the railway operations of the country. Such associations, in fact, exist now as they did before those decisions, and with the same general effect." It should be added, however, that the associations have been able to produce "the same general effect" during a period of business prosperity. It is not at all certain that the recommendations of the associations as to rates would have had much effect had every road been struggling to the uttermost to increase its tonnage.

The list of railway associations published monthly in the Official Guide of the Railways of the United States

contains the names of nearly 150 organizations. Some of these are associations of technical officials, like surgeons, master mechanics, engineers of maintenance of way, and accounting officers. In other organizations the membership is made up of administrative officers, such as general baggage agents, general passenger and ticket agents, railroad superintendents, etc. Most of the organizations are traffic associations. There are the three classification committees, the official, Southern, and Western, and a large number of passenger and freight associations. Some of the bodies, like the Chicago Freight Committee, have strictly local jurisdiction. Boston, Cincinnati, Cleveland, St. Louis, and other cities have such committees. The most important organizations are the passenger and freight associations, some of which include the railroad systems serving large sections of the country.

In the main, the existing freight and passenger associations are reorganized forms of those that were established in the seventies and eighties, and the larger organizations may readily be grouped according to the territorial classification of railroads already presented. (1) The New England roads have a passenger association, but no corresponding freight organization. (2) The Trunk Line Association has the same membership it has had in the past. West from Buffalo and Pittsburg to Chicago is the territory of the Central Freight and Central Passenger Associations. Besides the Trunk Line Association in the East, there is the Middle States Freight Association, which is concerned with the joint business of the Central Atlantic States. (3) South of the Potomac and Ohio and east of the Mississippi the most influential bodies are the Associated Railways of Virginia and the Carolinas, the Southeastern Freight, and the Southeastern Passenger Associations, the Southeastern Mississippi Valley Association, and the Southern Freight

Association. These organizations cover the field once occupied by the Southern Railway and Steamship Association. (4) In the Southwest are the Southwestern Excursion Bureau and the Southwestern Tariff Committee. (5) The Middle West has the Western Trunk Line Committee, the Western Passenger Association, and the Trans-Missouri Freight Bureau. (6) The traffic to and from the Pacific coast is supervised by the Transcontinental Freight Bureau and the Transcontinental Passenger Association. In each of these six sections there are several other traffic associations less influential than those just noted; only the more important ones are included in this list.

During and since 1898 the consolidation of railroads has proceeded with unprecedented rapidity. That this must have greatly changed interrailway relations is obvious. The causes of this rapid consolidation have been in part those which have operated generally throughout the business world during the past few years. In production, even more strikingly than in transportation, the large organization has been supplanting the small one in order that business might be expanded, expenses reduced, and profits increased. There has, moreover, been a close connection between the rapidity of consolidation during recent years and the great prosperity that has prevailed since 1898. Prosperity called for expansion in all lines of business, and supplied the surplus capital needed for the enlargement of plants and equipment, and for financiering the consolidations that have accompanied industrial expansion. Prosperity was not a cause of consolidation, but was a favoring condition.

In the case of railroads, certain special causes have operated to hasten consolidation. The foregoing discussion of the nature of interrailway competition and of the provisions and effects of the laws passed to restrict rail-

way cooperation has indicated what these special causes are. Since the rivalry of railroads to secure competitive business tends, unless artificially restrained, to carry the rates in that business down nearly to the extra costs incurred in carrying that traffic, a large measure of unity of action becomes necessary if the railway companies are to keep their properties on a solvent and profitable basis, and are to protect the public interests by keeping their rates stable and relatively reasonable as between different persons, competing localities, and the various kinds of commodities.

For many years the rival companies sought to prevent competition from producing its undesirable results by rate and traffic agreements; but when it became impracticable for the railroads, either directly or indirectly, to effect such agreements, the only available course of action was to secure unity of management by such consolidations as would tend to divide the field. Undoubtedly railway consolidations would have taken place and the strong system would have continued to become larger had the interstate commerce law permitted pooling and had the courts not held the antitrust law to apply to rate agreements; but the incentives to consolidation would have been less urgent and the process would probably have been slower.

The consolidations are being brought about in four ways: by purchase, by lease, by means of stock holdings, and by "community of interest" in the management of distinct companies. Among the conspicuous instances of purchases are the sale of the Mobile and Ohio to the Southern, the Lake Shore to the New York Central, the Central Railroad of New Jersey to the Reading, the Burlington to the Northern Pacific and Great Northern, and the Western Maryland to the Wabash interests. In some cases the purchases have been made because of the

previous competition with the line bought, and sometimes because the acquisition of the line would alter the conditions of competition with some other rival system. The purchase is sometimes effected by exchanging stocks of the purchasing company for the securities of the road bought, but more often bonds have been used to make the payments. In either case there has been a large increase in capitalization.

In some States the laws do not permit a railroad to buy out a competing line. In those States, however, consolidation by lease is usually possible. Most consolidations in New England (notably the absorption of the Boston and Albany by the New York Central, and of the Fitchburg by the Boston and Maine) have been by lease. The Great Northern system and many others have been built up by lease. The tendency of late with several systems has been to change leases into ownership, where the law permits such action. The advantages of securing control by lease are that no new securities need to be issued, and that if the period of the lease is not made unduly long, there is an opportunity from time to time to readjust the financial relations of the two companies. The advantages of purchase of the acquired road are that absolute control for all time is secured, and that the several parts of the system built up by purchase are more firmly united. The system becomes more of a unit.

An easier method than purchase in fee, or than leasing, of securing control of an independent company is by the purchase of enough of its capital stock to be able to control the policy of its management. A bare majority of the stock is all that need be purchased, and often a minority share will suffice, because of the voting efficiency of a compact holding. The Pennsylvania had virtual control of the Baltimore and Ohio when $40,000,000 of

the $105,000,000 of the stock had been acquired. The Union Pacific could dictate the policy of the Southern Pacific by buying $85,000,000 of $192,000,000 of stock. The plan of consolidating railway interests by stock holdings has long been followed. In 1892 nearly 25 per cent of the railroad stock was owned by the railway companies themselves; the financial depression following 1893 reduced the corporate holdings to less than one-fifth of the total in 1897, but in the three succeeding years they rose over $400,000,000, and again became about one-fourth of the entire amount of stocks. In other words, in the recent consolidations of railroads much use has been made of the old method of stock purchases.

The fourth method of securing unity of control is a device of recent invention. It is called "community of interest," by which is meant making some of the directors or officials of one company members of the boards of directors of other companies. Usually, but not always, there is also a community of ownership, the principal owners of one company becoming financially interested in other and rival roads—i. e., the "community of interest" usually involves community both in ownership and in management. This plan of securing harmonious action among rival interests was well illustrated in the construction of the Board of Directors of the Northern Pacific in 1901. The Great Northern and Union Pacific were each trying to secure control of the Northern Pacific. The struggle also involved the control of the Burlington system, and thus concerned the interests of the Chicago and Northwestern system, a competitor of the Burlington having close traffic relations with the Vanderbilt or New York Central system. The Chicago, Milwaukee and St. Paul, another competitor of the Burlington, and a road closely connected with the Pennsylvania system, was also interested in the outcome of the contest.

The rival parties placed their interests in the hands of J. P. Morgan, who settled the struggle by placing on the directorate of the Northern Pacific the president of the Great Northern, the chairman of the Executive Committee of the Union Pacific, a director of the Chicago, Milwaukee and St. Paul, a director of the Chicago and Northwestern, and a vice-president of the Pennsylvania Railroad.

When the Pennsylvania purchased a controlling interest in the Chesapeake and Ohio, the board of directors was so changed as to make place not only for certain officials of the Pennsylvania road, but also for representatives of the New York Central system, which was invited to share in the new management of the Chesapeake and Ohio. This community of interest policy has been so generally followed since the beginning of 1898 that most of the prominent railroad directors and capitalists are members of several boards and financially interested in numerous companies, the purpose of this being to secure more harmonious relations among rival companies within each of the territorial groups of roads described in Chapter V.

The interrailway relations since the close of 1898 have been unusually harmonious. There have been, however, several instances of rate-cutting. In the autumn of 1900 the cutting of rates was largely indulged in to secure westbound business from the north Atlantic section. In 1901 the competition of the lake lines with the trunk lines for the grain trade led to rate-cutting; a war over passenger fares from the Missouri River to California was threatened, freight rates between the Missouri River and the Southwest were said to "have been very much demoralized" during the early summer; in the section north of the Ohio River concessions to shippers and deviations from rates prevailed on traffic from the South; and

doubtless there were many other instances of discriminations and rate-cutting. The investigations of the Interstate Commerce Commission in 1901 brought to light the fact that packing-house products from the central West to the Atlantic seaboard were habitually charged from five to ten cents per hundred pounds less than the published tariffs. The commission also ascertained that "grain and grain products move from points of origin to the seaboard generally upon secret rates." Since 1903 rate struggles have been almost entirely avoided, and competitive rates have been generally maintained. Moreover, the granting of rebates has been practically stopped by the laws of 1903 and 1906.

For over five years, beginning in the summer of 1893, the variations from published rates were frequent and discriminations were general. The report of the Interstate Commerce Commission for 1898 declared that "a large part of the business at the present time is transacted upon illegal (other than the published) rates. Indeed, so general has this rule become that in certain quarters the exaction of the published rate is the exception."

The condition of affairs prevailing in 1898 was changed by the return of highly prosperous times, which greatly increased the traffic of all the roads, and by the influence for stability exerted by the community of interest in railway management. This latter force may be expected to continue and become stronger as time goes on, for the process of consolidation will certainly proceed, and the policy of community in ownership and management has probably come to stay. During the seasons and years of abundant traffic, the railway companies, by virtue of their closer relationship, will probably be able to prevent serious rate wars; and, judging from what has occurred since 1903, their control over rates will enable them to prevent both open and secret discriminations.

The recent control of rate-cutting among rival roads does not fully prove that charges can be kept altogether stable if prosperity shall give way to a prolonged period of business depression; but as consolidation proceeds, and the community of interest becomes more general, the stronger will be the forces which make for harmony in interrailway relation; although the conditions of 1898 are not yet remote enough in time to warrant the assumption that they can not be repeated.

The foregoing analysis of the present and probable interrelations of railways suggests that pooling is not so necessary for the control of railway rivalry as it formerly was. If consolidation had reached the stage of a complete division of the field, or territorial grouping of the railroads of the United States, there would be no occasion for pooling of traffic to secure stable rates; but consolidation will not reach that point for some considerable time. It is, moreover, desirable that nothing should be done to quicken the process of consolidation. The public will doubtless be confronted with the accomplished grouping of railroads territorially quite as soon as it is able to cope with the problem of Government regulation which that situation will present.

REFERENCES FOR FURTHER READING

Report of the Industrial Commission, vol. xix, pp. 304–348.

Langstroth, C. S., and Stilz, W. Railway Cooperation, 1899. This volume is No. 15 of the Series in Political Economy and Public Law, publications of the University of Pennsylvania.

Hadley, A. T. Railroad Transportation. Chapter VI, Competition and Combination in Practise.

Cooley, T. M. Popular and Legal View of Traffic Pooling. This paper appeared in the Railway Review, January 8, 1887, and is republished in the volume entitled Compendium of Transportation Theories, edited by C. C. McCain.

KNAPP, M. A. Some Observations on Railroad Pooling, 1896. A paper in vol. viii of the Annals of the American Academy of Political and Social Science.

NEWCOMB, H. T. Railway Economics, 1898, pp. 120–142.

RIPLEY, WM. Z. (Editor). Trusts, Pools and Combinations, 1905. A collection of papers and court decisions.

RIPLEY, WM. Z. (Editor). Railway Problems, 1907, chaps. i, ii, and iv. A collection of papers and court decisions.

The literature on railway combinations and pooling is voluminous, a brief but good bibliography of which is contained in the volume by Langstroth and Stilz on Railway Cooperation. The eight references above cited present the history and theory of the subject very satisfactorily.

CHAPTER XVIII

MONOPOLY AND COMPETITION IN THE RAILWAY SERVICE

The railroad service of the present and future is one that must be performed by large corporations, among which cooperation is necessary. Not only in the management of their joint traffic, but quite as much in the regulation of their competitive business, experience shows that the railroad companies must work together if the property invested in railroads is to be protected against "ruinous competition," and if the public is to receive an adequate service at rates that do not unjustly discriminate between persons, places, or classes of traffic. In spite of State and Federal laws to enforce competition among railroads, and possibly to some extent because of those laws, the companies have sought unceasingly to increase the efficiency of their cooperation.

The forces which control industrial organization, whether in transportation or in manufacturing, are bringing about consolidation with unprecedented rapidity, and the method of regulating interrailway rivalry now most favored is that of community of interest in the ownership or the management of competing lines. The consolidations in process are working out a territorial grouping of the railroads of the United States that will eventually accomplish a fairly distinct division of the field. How soon this grouping will be fully completed, and to what extent the legalization of pooling would retard the move-

ment, is conjectural; but there can be little doubt as to the final outcome of the present tendencies.

To what extent will the extension of community of interest and the progress of territorial grouping establish monopoly conditions in the transportation service? This is a question to which a clear answer is desired by every thoughtful person. Private monopoly is abhorrent to our sense of right. It runs counter both to our feelings of what is just and to the legal principles in which those feelings find expression. If the cooperation of independent railroads by pooling or otherwise or the consolidation of their management by means of a community of interest or by the absorption of the weaker lines by the stronger systems confers monopoly powers of an oppressive character upon the corporations which thus unite, the protection of the public interests demands either that the cooperation or consolidations should be prevented, or, if their prohibition is not possible, that the relations of the railroad companies with each other and with the public should be so regulated as to limit the exercise of monopoly powers. The scope and limitations of monopoly and competition in railway management must be understood and kept in mind in considering railroad charges and the questions of Government regulation.

It is customary for those who have not studied the subject carefully to associate monopoly with large corporations or combinations of capital, and to assume that the consolidation of independent companies is brought about mainly to establish a monopoly. As a matter of fact, the concentration of the control either of capital or of productive forces may create a monopoly or it may not; and if monopoly powers are secured, they may be either complete or only partial.

The two leading motives for the substitution of the large railroad or industrial corporations for the smaller

ones are (1) to reduce the expenses by means of the greater economy of doing business on a large scale; and (2) to secure, if possible, the power, either absolute or partial, of fixing the prices paid by the purchasing public. The first of the two purposes is always alleged to be the one sought for by those concerned in any particular consolidation, and usually expenses can be cut down by placing several small concerns under one control, although this is not always possible, because the supervision of the affairs of a large business can not be so close and so personal as can those of a small undertaking.

Any producer or carrier, whether an individual, a corporation, or a combination of corporations, who has the power to fix the price which the buyer must pay possesses a monopoly. The monopoly power is the power to fix the price. An individual or a combination having full power to fix the purchaser's price possesses a complete monopoly. In some businesses the producer's power is absolute only in parts of his business; in other parts the forces which fix prices are beyond his control; such a producer has a partial monopoly. But whether the monopoly is partial or complete, the essence of monopoly is the power to control the price; and a business enterprise, whether large or small, is monopolistic to the extent that those who manage it have control over the prices which the buyer must pay.

In a certain sense the producer never has the sole power to fix the price, even though he may be the only person from whom the commodity or service in his control can be secured, because he must always consult the nature of the purchasers' wants and their ability to pay. If the possessor of a monopoly charges more than any buyer is willing to pay, no sales will be made; if the prices are fixed higher than any considerable percentage of possible buyers can afford to give, the market will be

largely restricted. This is equivalent to saying that the consumers or users are the ones who fix the limit beyond which charges can not go; but if all or the larger share of the supply required by purchasers can be obtained only from one person or combination of producers, those who sell can compel those who buy to pay all they are willing to give rather than go without the commodity or service desired. The price fixed under such conditions is a monopoly price pure and simple. Those who sell charge what they think will yield them the maximum profits on their total business.

A familiar example of a monopoly is the Standard Oil Company. It does not own or control all the oil-wells, but owning a majority of the wells or of the pipe lines from the wells, it is able effectually to control the oil market of the country. The price which consumers must pay for petroleum is determined by the Standard Oil Company, and the prices are presumably those that will yield largest profits. In fixing the price of oil, however, the market has to be carefully studied. The amount of oil used is largely affected by the price, and this is so not only because if prices are made unduly high men will forego in part the advantages and pleasure of artificial light, but also because the people who live in towns and cities usually have the option of using gas or electricity instead of petroleum oil. This explains why the price of illuminating oil steadily declined for many years, when at the same time the Standard Oil Company was increasing its control of the production and sale of petroleum.

To determine whether a railroad corporation, large or small, possesses a monopoly, and if so whether its monopoly is absolute or partial, it is necessary to ascertain whether and to what extent the railway companies acting singly or in combination can fix the rates and fares

paid by the public. If those who manage our railroads can fix the charges to be paid for their services, subject only to the ability and willingness of the public to pay the charges, then the railway service is a complete monopoly. If, however, the rates and fares are subject to forces which the railroad companies can not control, even when they act in harmony—forces which keep the charges much below the ability of the purchaser to pay, and in many instances below what he would pay rather than go without the service desired—then the railroad business is not a complete monopoly; it is subject to competitive forces which prevent it from becoming more than a partial monopoly. One purpose of the discussion of inter-railway relations in the three preceding chapters was to show that the railways have never been able in the past to do more than restrain or regulate competition; they have never succeeded in eliminating competition among themselves. Their monopoly has never been more than partial.

In considering the extent to which the railroad service is a monopoly and to what extent it is and will continue to be competitive, attention must be given to the effect of competition upon the charges fixed on the railroads which are separately owned but whose owners cooperate by pooling or otherwise, and also the effect upon the charges fixed on the roads that have been consolidated into a large system or a group of systems serving a considerable section of the country. The two questions to be answered are: How does competition affect the charges of cooperating roads, and to what extent can the territorial grouping of railroads eradicate the competition which formerly prevailed among associated or cooperating but not consolidated systems?

There are two kinds of cooperation: that of connecting roads, and that of competing lines. The necessity

and desirability of the joint arrangements for expediting through traffic are recognized by everybody, and the interstate commerce law requires the railroad companies to "afford all reasonable, proper, and equal facilities for the interchange of traffic between their respective lines," and the same law prohibits all devices intended to prevent the "carriage of freights from being continuous from the place of shipment to the place of destination." But whether the law did or did not require this, the connecting railroads would usually find it to their advantage to facilitate through traffic as much as possible.

The other kind of cooperation is that among competing roads. Thus far, the laws of the States and the Federal Government have endeavored to prevent unity of action among competing carriers. The laws against pooling and against associated action in the making and maintenance of rates and fares have been stringent, and the courts have held that pooling and associated rate-making, whether prohibited by statute or not, are illegal at common law because they are "in restraint of trade." The theory underlying these statutes and this interpretation of the common law is that the cooperation of rival railroads enables them to eliminate competition in the matter of rates and fares, and thus to deprive the public of its safeguard against monopoly and extortion.

It is obvious that the chief purpose of the railroad companies in associating is to agree upon the rates they will charge and to stop bidding against each other to secure traffic; in other words, the object of cooperation is to stop competition, if possible, and if that is impossible, to restrain competition; and, as a matter of fact, cooperation does enable the railroads in a large measure, and consolidation enables them to a greater degree, to remove the incentive of the managers of the different lines serv-

ing the same termini or common territory or rival regions of production to cut rates to secure business. To what extent do rates and fares remain subject to competitive forces? To what extent do railroad charges become monopolistic?

Competition among railroads is carried on to secure an increased traffic. Most kinds of traffic can be attracted in either one of two ways: by a reduction in charges or by an improvement in the service rendered. Theoretically, these two kinds of competition are the same; for in each case the carrier gives more for what he gets and the purchaser of the service receives more for what he pays; but in practise these two ways of competing operate differently. Experience has shown that agreements as to charges and as to divisions of traffic or earnings have not kept railroad managers from seeking to attract business by improvements in service. In the days when pooling was general, the traffic allotments were usually made annually, and each company a member to the agreement sought by improving the service offered to increase its business, and thus to be able to establish a claim to a larger share of the pooled business. But quite independent of pooling arrangements, every railroad management has a powerful incentive to increase the traffic of its road or system of lines, because the railroad business is one in which the profits increase more than proportionately to the enlargement of the traffic. It is a business of rapidly "increasing returns," and agreements as to rates do not stop the operation of that law, nor indeed can it be done by the consolidation of competing roads.

The interrailway competition that attracts most attention is that which occurs in places served by two or more roads. Some cities or junctions are called competitive points. In them the several carriers may bid more or less keenly for the same traffic. In fact, however, the

great majority of cities and localities are served by only one railroad, and if competition were limited to junction points it would have comparatively limited scope. Rate and pooling agreements have dealt mainly with the traffic of "competitive points," and consequently have not directly concerned the business of the great majority of places, nor have the agreements ever covered more than a minor share of the total traffic of the railroad companies making them. If the competitive forces affecting railway charges were only those operating at junction points, the greater portion of the railway business would be non-competitive. The rivalry of railways at competitive points has been only one of the safeguards of the public against high charges.

A more far-reaching influence on rates is exerted by what is termed "the competition of markets," by which is meant the competition in the same markets of producers in different sections of the country and different parts of the world. Since the costs of transportation have been so reduced by the railroad and the steamship that practically every producer has the world for his market, the commodities of many sections compete in the same centers of distribution. Every railroad is a joint producer with the farmers, the manufacturers, the miners, and the lumbermen of the section served by the railroad, the carrier having a common interest with the man who grows or makes commodities in getting those commodities into the world's markets, and at a cost that will permit the articles to be sold in large quantities.

The "competition of the markets" is not dependent upon the relations of the railroads to each other. Whether the carriers act singly or in association or are consolidated into territorial groups, each group having a single management, the struggle for the market goes on. The rivalry is international as well as interregional within

a single country; it is the struggle which causes and accompanies the territorial division of production.

The instances of industrial competition are so numerous and well known that only a few need be mentioned. The coal from Nova Scotia competes in New England with that from Pennsylvania and West Virginia; the bituminous coal-fields west of the Alleghanies compete with each other and with the anthracite fields east of the mountains. Alabama iron competes with that from Michigan and Pennsylvania in the American trade, and the iron and steel and other manufactures of these and other States are sold the world over in competition with European products.

A striking illustration of the effect of the competition of markets was alluded to in the second paragraph of Chapter XV. The first long railroad trunk lines to be established in the United States were those running east and west north of the Potomac and Ohio Rivers. During recent years numerous north and south trunk lines have connected the Gulf with the central West, and now that great and developing region uses both the Atlantic and Gulf ports as gateways for its export and import trade. Rates between the Atlantic seaboard and the central West can not much exceed those between the central West and Galveston, New Orleans, Mobile, and other Gulf cities.

For the trade of the Southern States there is a strong competition between the States of the upper Mississippi Valley and those adjacent to our north Atlantic seaboard. The manufacturers and others shipping south from the north Atlantic States have the option of sending their goods by water or by rail, and are thus able to secure more favorable rates from the railroads than could otherwise be obtained. The railways leading south from Illinois and the surrounding States are obliged to give

their patrons as low rates as the Eastern shippers receive, otherwise the Western producers would lose their Southern markets.

The industrial competition illustrated in the preceding paragraphs applies to some extent to the traffic of the small local or "non-competitive" points as well as to the shipments to and from the large centers of production or distribution. Although the local shipper is served by only one carrier, he usually has some measure of protection against high rates. The carrier's monopoly is not absolute for several reasons. In the first place, it is to the interest of the railroad company to give the local producer a rate that will enable him to market his commodities with a profit sufficient to cause the business to expand and the railroad's tonnage to increase. Furthermore, the local rates are not permitted by the interstate commerce law and the laws of several States to exceed the through rates when the local and shorter distance traffic is hauled over the same route and in the same direction as the longer distance through business. The competitive forces which bear down charges at the places served by several roads indirectly affect the rates at local points having only one carrier.

Again, no railroad can safely keep its local rates much higher than other companies charge on their local business, because if this is done those persons having industrial establishments along the line of that road will (if their business is such that it can be moved) transfer their plants to the lines of railroad companies offering more favorable rates. If the industry is one from which the invested capital can not be withdrawn, it must remain; but the business will decline in competition with the regions receiving more favorable rates, and the railroad's tonnage will fall off. Every railroad management is eager to have capitalists invest along its line of road, and

frequently the special inducement of a low local rate is offered. Other things being equal, that road will secure the greater number of industries and have the more rapid development of local traffic whose local rates are the lowest. Railroad companies are fully aware of this fact, and many of them have officials, usually called industrial agents, whose business it is to ascertain what new industries can be developed along the company's lines, and to find the men who are able and willing to devote their capital and energy to those industries.

Railroad companies classify their freight by putting like kinds of commodities into the same class, and they are forbidden by law to discriminate unjustly against particular classes of freight; they are likewise forbidden to make unreasonable discriminations between different shippers and between different localities; and while it has not been possible for the law to prevent all unfair discriminations, it is possible that the ability of some of the local industries to command favorable treatment has been of indirect benefit to the other industrial enterprises—those from which capital can not readily be withdrawn and those whose owners have not obtained the assurance of favorable rates as a condition of locating along the line of a particular railroad. Industrial competition, through the influence it has upon the mobility of capital and upon the direction taken by capital seeking investment, has probably affected to some extent the rates on nearly all kinds of local traffic. This competitive or regulating factor is one whose operation is only partially stopped by the consolidation of roads into territorial groups. By combining all the railroads within a large section of the country under one control, the local rates on all the roads would probably be equally favorable or unfavorable; but still each road would have the same reasons it formerly had for keeping its industries in a

flourishing condition and for striving to secure new industries. Moreover, if there were several groups of roads the management of each group would take care to make local rates that would hold and attract capital.

The conclusion warranted by the foregoing analysis of the influences affecting railway charges is that the railroad company possesses only a partial monopoly. If the railroad company were able to compel its patrons to pay *all* they would pay rather than forego receiving the transportation services desired, the company would possess a complete monopoly. On the other hand, if the railroads were obliged to accept only such rates and fares as the shippers and travelers might choose to pay, the carriers would have no monopoly power whatever. As a matter of fact, neither the carriers nor their patrons possess absolutely the power of determining the charges for transportation. Rates and fares are neither the lowest the railroads will accept nor the highest the public will pay; and this is so because the monopoly possessed by the carrier is only a partial one. Railroad charges are affected by numerous competitive forces which are beyond the control of the railway managers, and which prevent transportation charges, in most instances, from being fixed at the point of maximum profits. These competitive forces prevail not only among carriers, but quite as much in the industrial world.

The effect of railway consolidations and of the ultimate division of the country among a small number of powerful railroad corporations will unquestionably increase the power of those corporations to restrain the operation of the competitive forces just described. The present partial monopoly of the companies will become a more effective one; but the nature of the competitive forces is such that the railroads can not secure a complete monopoly. Whether the monopoly power possessed

by the railroad companies at the present time, or at any future time, is a greater one than is consistent with the welfare of the public, is a question for the public to decide. The railroad companies are engaged in a service of a public nature; if they possess great power in determining transportation charges, it is the right and the duty of the Government to limit that power by regulative legislation. It does not disprove the necessity for the Government regulation of railway charges to prove that the monopoly possessed by the railroads is only partial and not absolute.

The railroad business is very frequently spoken of as a "natural monopoly." While the term expresses a partial truth, it is apt to suggest the idea of a complete monopoly, and thus to convey a wrong meaning. Indeed, those who call railroads natural monopolies also apply the term to industrial enterprises whose managers have the power to fix prices at the point of maximum profits—i. e., to charge all the public will pay rather than forego purchasing. It is better to call railroads partial monopolies, and to apply the term complete monopolies to those businesses in which the seller has the power of dictating prices to the buyer.

REFERENCES FOR FURTHER READING

Hadley, A. T. Railroad Transportation, chap. iv.
Report of Industrial Commission, vol. xix, pp. 355–364.
Newcomb, H. T. Railway Economics, chaps. viii and ix.

CHAPTER XIX

THEORY OF RATES AND FARES

THE foregoing analysis of interrailway relations and of the scope of competition and monopoly in the railroad service indicates the conditions under which carriers act in fixing their rates and fares. It is the purpose of this chapter to inquire what railway charges theoretically are, to consider what principles are followed in fixing the amount which the shipper or the traveler shall pay the carrier.

The charge for transportation, or any other service, may in theory be fixed either with reference to the cost of the service to the agent who performs the work or with regard to the value of the service to the recipient, or the charge may be affected by both the cost and the value of the service. Abstractly considered, it seems most natural to assume that the payment for the service should be in proportion to the cost—that the carrier's charges for services of different kinds should vary according to the differences in the costs of performing the several tasks. In reality, however, it is practically impossible to base railroad charges upon the costs of the services.

In discussing the cost theory of railway rates, it is necessary to keep clearly in mind what is meant by cost, because the word is used with several meanings. In the preceding paragraph the word is used to include *all* the expenses chargeable against the service—interest on the capital employed, deterioration of plant, insurance, wages,

outlay for operating expenses, ordinary business profits, etc. The word cost is, however, frequently used to mean only operating expenses, or the expenses incurred in using the plant to perform a service. The railroad is thought of as being in existence and in use, and the costs of the services are considered to be expenses of operation. In this sense the cost of each of the several services is its appropriate share of the aggregate operating expenses caused by the performance of a multitude of services. The cost of a single service is such a part of the total operating expenses as may be properly charged against that service. Again, the cost of any particular service is often thought of as only the additional or extra expense incurred in performing that service—i. e., the outlay that would not have been made had not the freight or passenger been carried. This is the sense in which the traffic manager is most apt to use the term when he is considering whether he will accept or reject an offer of freight or an opportunity to run an additional passenger coach or train. The traffic manager seeks to ascertain how much additional it will cost to do this service, and if the increase in expenses is appreciably less than the additional receipts to be secured, he will perform the service rather than let it be done by a rival carrier.

In whichever sense the term cost is used, it is practically impossible for the railroad official to ascertain what are the costs of a particular transportation service. Every railroad engaged in general traffic carries thousands of different commodities; the cargo of a freight-train is usually made up of a large variety of articles, and frequently several kinds of goods are sent in the same car. To enable the company to run a train or haul a car, the roadway, depots, yards, and all the different parts of the service have to be provided. Out of the gross receipts obtained from the shippers and passengers, the various

expenses of the company are met; but no company is able to determine just what part of the expense incurred by the several branches of the service should be charged against the man who has sent a ton or a car-load of goods a certain distance over the company's road, or against the man who has traveled a given number of miles on the line. Most of the expenditures of a railroad company are "joint costs"—i. e., they are paid out for the maintenance of the service as a whole, and have little direct connection with any particular act of transportation. The tracks, stations, yards, offices, and administrative departments all assist in performing every one of the activities of the company. The revenue obtained from each freight and passenger service performed should, if possible, be made to contribute something, but no one can say just how much, toward the joint or aggregate costs of maintaining and operating the transportation organization.

About as far as the traffic official can go in measuring cost is to calculate the expenses of running a train. The outlay for wages of train crew, for fuel, oil, repairs, and maintenance of cars and locomotives, can be calculated rather closely, and thus the expense of moving a particular train a mile—the "train mile costs"—can be got at with some degree of certainty; but unless the train is loaded with only one commodity this does not enable the statistician to calculate what movement expenses are incurred in connection with each or any of the articles of freight of which the train's cargo is composed. Besides meeting the expenses due to moving the train, the receipts from the traffic carried by the train should contribute a greater or less amount toward defraying the company's "joint costs," but how much of the joint expenses to charge against any particular train no one can determine, much less can one decide how much of the

"joint costs" are incurred by each commodity in the cargo.

If it were possible to ascertain the cost of performing a particular service, and thus to base rates and fares upon the cost, it would not be to the advantage either of the public or the carrier to adopt the cost basis of charges. If charges were portioned among commodities according to the cost of transportation, the revenues derived from articles of small bulk but of high value—such as laces, silks, shoes, etc.—would be much less than present receipts, and such commodities as coal, iron ore, lumber, grain, salt, and fertilizers would have to pay higher rates than they are now charged. To raise the rates largely on the bulky materials of industry would so restrict the amounts transported as greatly to limit industry, to reduce the volume of manufactures to be carried by the railroads, and to impose serious restraints upon social progress. The phenomenal industrial advance of the last twenty-five years has been made possible by the low transportation rates on food products and the materials of industry; and these low charges would not have been possible had not the articles of higher value per bulk paid more than their proportionate share of the total expenses of railroad transportation.

If the value of the service received by the shipper or traveler were made the basis of railway charges, rates would be fixed with reference to the value added to an article by being transported from one place to another, and fares would depend on the values which passengers placed upon being carried certain distances by rail. If a bushel of wheat is worth 60 cents in Minnesota and 80 cents in New York, the railroad can add 20 cents to the value of the wheat by carrying it from Minnesota to New York; and if the transportation charge were made equal to the entire value of the service of carriage the

rate could be made nearly 20 cents a bushel. Likewise, if the people desiring to travel between Philadelphia and New York place an average estimate of $2.50 on the value of riding by rail between the two cities, the fare can be made $2.50. It is evident, however, that the value of the service in the passenger business is not easy to ascertain. One man may prefer to pay several hundred dollars rather than forego a quick trip by rail from New York to Philadelphia, while another person desirous of making the trip may not consider the service worth as much as $2.50. Commodities have market values in all places where they are bought and sold, and the excess in the price of an article in one market over the price in another place indicates how much value transportation can add to the article, but there is no general measure of the values that can be created by transporting persons. All the railroad company can do to ascertain the value of its passenger services is to watch the effects of fares on the volume of travel. If an increase in fares considerably reduces the number of journeys taken, the fares are presumably above the average value of the service. Likewise, if a large increase in travel results from a reduction of charges, the inference would be that fares had been in excess of the average of the value of the service. If the charges are based on the value of the service they may be fixed so as to absorb all or only a part of the values created by changing the places of persons and things, but in either case the charges are made with reference to the values created, and not with regard to the costs or expenses incurred in doing the work of transportation.

Another basis for freight transportation charges may be found in the value of the commodities to the shipper. It would be theoretically possible to construct a schedule of rates by fixing the charges with only incidental reference either to the cost or to the value of service, but with

regard primarily to the absolute and relative values of the articles carried, and there are some reasons why this would be desirable. The absolute increase in the value which cheap and bulky goods, like coal, lumber, iron, grain, etc., obtain by transportation is small per ton of weight, as compared with the addition to the value gained by a like quantity of high-priced commodities, such as shoes and dry-goods. A ton of coal worth $2 on the car at the mine may sell for $3 at the ocean pier, transportation having added 50 per cent to its value; whereas, a ton of silk goods may be worth only 1 or 2 per cent more in Chicago than in Paterson, N. J. If the freight rates are based on the value created by the transportation, the shipper of coal will probably pay 30 or 40 per cent of the value of the coal for getting it carried to market, while the shipper of silks and other costly articles will possibly pay the carrier 1 or 2 per cent of their value. Measured in percentages of the values of the commodities, the value of the service is low for costly articles, and high for cheap and bulky commodities.

To fix railway charges somewhat as taxes are levied—i. e., on the value of the articles carried—would be an equitable method. The carrier would secure his gross receipts, according to this principle, by taxing the producers of grain a certain per cent of its value, and the various manufacturers and other shippers certain percentages of the values of their goods. The rate of assessment on the producers of bulky articles would necessarily be higher than the rates imposed on shippers of costly goods, but the effect of the application of this principle would be to make the freight charge on high-priced goods more than they would be if made according to the cost or value of the service, and to make rates on bulky commodities lower. Whether the rates of assessment imposed upon different classes of commodities were relatively just would

be a question to be determined in the first instance by the carriers and shippers, but also a question upon which the state would have the last word, because the state is the final judge of the reasonableness of all transportation charges.

The railway officials who make the rates and fares do not consciously endeavor to follow any of these abstract theories of railroad charges; they study the traffic and the conditions of competition under which it must be carried on, and seek to "charge what the traffic will bear." They could not make the cost of service their guiding principle if they wished; and, indeed, they have no desire to do so. They are in reality concerned with two things: what the one who receives the service can pay, and what rate the rival carrier, if there is or may be a competitor, is giving or is likely to give. In determining what the buyer of transportation can pay, the chief consideration is the value of the service to the shipper or passenger, and the intelligent determination of that question requires the exercise of sound judgment. Charging "what the traffic will bear" seldom justifies the carrier in exacting *all* the traffic will bear at the time the charges are made, because such rates and fares would prevent the traffic from growing in volume and variety, and would thus interfere with the future prosperity of the railroad. How traffic managers actually make rates and fares in seeking to charge what the traffic will bear is considered in the next chapter.

The chief aims of the traffic manager in fixing rates and fares are to obtain a profitable revenue and to secure an increasing volume of business. What he seeks most of all to avoid is a charge that will interfere with the growth of traffic. He realizes that railroad transportation is a business of rapidly increasing returns, and he always wants more business, because that means more profits.

The traffic officials are not especially concerned with the absolute or relative "reasonableness or justice" of the charges paid by different persons or levied upon different classes of goods, except in so far as an unjust or unreasonable charge may interfere with the profits or the growth of traffic. With the state, however, the primary consideration is the absolute and relative justness or reasonableness of rates and fares. It is the duty of the state to secure to each person just treatment by public carriers. Moreover, this duty must be performed in such a way as to do justice to the carriers and to further the progress of society. The state is, therefore, compelled to seek an answer to the question, What is a just and reasonable rate? Unfortunately, the question can not be answered with mathematical precision. There is no general formula or rule by which the justice of a rate or fare can be determined; the state officials must content themselves with analyzing and giving due influence to the considerations that should have weight in rate-making. If the railroads were owned and operated by the Government, the state's duty of insuring to its citizens justice in transportation charges would be a somewhat less difficult one, but even then it would not be an easy matter to find and follow the sure path of justice.

As long as the railways are owned by private corporations, a rate for any particular service can hardly be just to the carrier unless it equals or somewhat exceeds the additional costs incurred in performing that service—the expenses that would have been avoided had that service not been rendered. While it is neither possible nor desirable to adjust rates and fares proportionately to costs of service, the demands of justice seem clearly to require that total costs, including a fair profit on invested capital, shall be covered by total receipts, and that the minimum rate or fare shall cover the additional oper-

ating expenses incurred by the carrier in performing the particular service for which the charge is made. There would be no theoretical objection, from the standpoint of justice, to an adjustment of charges by which certain kinds of commodities or certain classes of travel should be required to contribute little or nothing toward the joint costs or fixed charges, provided the articles of high value and the persons who travel luxuriously can be and are assessed rates and fares that will yield enough to pay the fixed charges and joint costs; but charges that did not cover the "additional" costs of operation would be unjust to the railroads and would work a detriment to the public by checking the growth of the railway mileage and the development of traffic.

No railway charge can be greater than the value the shipper or traveler can gain by securing the transportation service desired. A charge greater than the value of the service would be objectionable not so much because of its injustice as because it would prevent the performance of the service. No one desiring a service will pay more than the service is worth to him, and traffic managers are, of course, careful to keep the charges below this maximum point; but between this upper limit, set by the value of the service, and the minimum charges, fixed by the extra costs incurred by performing a particular service, there is a wide range through which rates and fares can and do vary. Where within this range the line of justice is to be drawn, where charges shall be fixed so as to prevent or minimize unjust discriminations, constitutes the difficult problem of Government regulation. Experience has shown that discriminations of a most detrimental character will be made unless prevented by Government authority.

Not every discrimination is unjust. If such were the case, justice among shippers would consist in charging

every person a like sum for the same or essentially similar services. No two carriers perform their services under identical circumstances. One railroad may have easy grades, few curves, a traffic of about equal volume in each direction, and may be free from competition with a water-route. Another company's road may have steep grades and sharp curves, and its traffic may be carried mainly in one direction and in competition with a line of vessels. It is reasonable that the charges over the second of these roads should be higher than over the first. Indeed, so various are the factors affecting the reasonableness of railroad charges that the state can formulate no general rule by which to test the reasonableness of all rates and fares. In deciding upon the justice of charges, each company and each class of traffic must be considered with reference to the conditions peculiar to the company and to the class of traffic in question. In legislation, to secure relative justice among those served by the railroads, the state can prohibit only what is embodied in the third section of the Interstate Commerce Act and make it unlawful for a carrier to give "any undue or unreasonable preference or advantage to any particular person, company, firm, corporation, or locality, or any particular description of traffic." The determination of what constitutes an undue or unreasonable preference must be left to the judgment of the courts and expert officials of the Government.

In reaching a decision as to the reasonableness of railway charges, the officers of the state are in duty bound to consider the interests of the carrier, the individual shipper, and the general public. The carrier's minimum charge is fixed by the "extra" cost due to performing the service in question; the shipper's maximum payment is the value of the service; to locate the just charge lying intermediate between these two ex-

tremes, consideration must be given to the cost of the service to the carrier and the conditions of competition under which the service is performed, the value of the service to the one who receives it, the value of the article, and its importance to the industrial progress of society. As the state endeavors more consciously and intelligently to realize justice in transportation charges, greater attention will be given to the relation of rates and fares to the interests of society. The carrier is entitled to adequate remuneration for his labor, his capital, and his risks; the shipper and passenger are entitled to charges that are absolutely and relatively reasonable; the public as a whole may justly insist on such a distribution of those charges among different kinds of commodities and classes of passengers as will be most advantageous to society. One way, and probably the best way, to accomplish this "socialization" of rates and fares, is to extend the taxation principle of railway charges—to fix rates more largely with reference to the value of the commodities, and to fix fares so that they will more nearly correspond with the abilities of different classes of travelers.

The socialization of rates and fares—the collection of the total revenue to which the carriers are entitled by fixing charges primarily with reference to the needs of society, and only secondarily with regard to the cost or value of each particular service—is the goal toward which the public will be led in its efforts to secure and enforce justice in transportation charges. However, justice is not to be had by discovering and applying any infallible rule or theory. Justice is a question of judgment, and the factors affecting judgment must be different for each case decided, and must change from time to time as society alters its ethical standards. The purpose of this chapter has been to analyze briefly the factors which do and properly may influence the judgments of

the carrier, the shipper and passenger, and the general public as regards railway charges.

REFERENCES FOR FURTHER READING

WEYL, W. E. The Passenger Traffic of Railways, chap. v.
HADLEY, A. T. Railroad Transportation, chap. vi.
SELIGMAN, E. R. A. Railway Tariffs and the Interstate Commerce Law. Political Science Quarterly, vol. ii, No. 2, 1887.
NEWCOMB, H. T. Railway Economics, chaps. x–xvi.
TAUSSIG, F. W. A Contribution to the Theory of Railway Rates. Quarterly Journal of Economics, July, 1891.
ACWORTH, W. M. The Railways and the Traders, 1891, London.
NOYES, W. C. American Railroad Rates, 1905, chaps. i and ii.

CHAPTER XX

RATE-MAKING IN PRACTISE

The problem of making rates and fares for the railroads in the United States and other countries where the roads are owned and operated by private corporations differs from the task of fixing the charges in countries where the government is the owner and manager. The sole aim of the corporation is to secure business profits; the purposes of the state are fiscal and social. The corporation will presumably seek to discover and enforce such charges as will in the long run yield maximum net profits to the owners of its property; the state will be inclined to adopt rates and fares no higher than are required to secure a small net revenue after meeting the expenses of operation and maintenance and paying the interest on the invested capital. In a few instances, as in the case of Prussia, state railroads have been managed with a view to making them bear a considerable share of the fiscal burdens; but even then the charges levied on the public have been adjusted also with reference to the accomplishment of military, industrial, or other social aims.

The Government usually has the advantage of a greater degree of monopoly in fixing its charges than is possessed by the corporation. However, this general rule has exceptions, and state systems as well as private ones are subject to the interregional competition, both domestic and international. Exceptions to the rule are found in countries where the state owns only a part of the

railroads and competes with the corporations controlling the private lines; also in France, where each railroad corporation has been granted by the state a monopoly within the section of country served by the company's lines. The tendency is to change partial into complete state ownership, because the accomplishment of the purposes of government management can best be secured under the conditions of monopoly resulting from the elimination of interline competition. So, in general, it may be said that, although the competition among private railroads has many degrees of intensity and the power of the governments owning railways to fix charges is more or less limited, the corporations have competitive conditions and the state has monopoly conditions to deal with in adjusting rates and fares.

When the traffic officials of a corporation set about fixing the rates and fares to be charged by their company they must ascertain as nearly as possible what the charges for various services *ought* to be and what they *may* be. The decision of what ought to be charged is affected by the theory held in regard to railroad charges—whether the principle of cost should be given as much weight as possible, whether the value of the service should be the chief consideration, or whether the value of the article and the wealth of the passenger should be the determining factor. The traffic manager probably does not endeavor to apply any one of these theories strictly, but he is very careful to inform himself as to the ability of each article or each class of travelers to pay the charges he may decide upon. To estimate the ability of an article to pay freight a thorough knowledge must be had of the costs of production, of the market prices at different points, and of the nature of the demand for the article—whether the article is considered a necessity or whether some other commodity can readily be substituted for it.

The service of freight transportation consists of taking goods from the producer or maker to the user, and the person who fixes the rates for that service must study the conditions of production and the nature of the consumer's market. Transportation charges must be such as will produce a net revenue for the carrier and will stimulate the development of his traffic.

In addition to ascertaining what the shipper or traveler is able to pay, the rate-maker must know the conditions of competition to be met. There may be rival carriers bidding for the same traffic; or, if not, probably the producers and carriers of other sections of the country or of other parts of the world are trying to get the trade of the markets reached by the rate-maker's road. The traffic manager will seek to charge "what the traffic will bear" and continue to increase, and he will study all factors affecting that problem.

It is necessary to simplify the task of rate-making by grouping as many as possible of the several thousand kinds of commodities carried by the railroad into ten or twelve classes, and charging like rates on all articles in the same class. The necessity for classification becomes greater with the increase in the quantity and variety of traffic handled. In 1886 the classification most used by the railroads north of the Ohio and Potomac enumerated 1,000 commodities. The following year it was superseded by Official Classification No. 1 with 2,800 listed articles, and the number has now become 3½ times that figure. The Western and Southern classifications respectively contain about 8,000 and 4,000 entries. This is due not only to the addition of new articles to the traffic carried by the railroads, but also to the more detailed classification of commodities, necessitated by the growing specialization in manufacturing and mercantile business.

The technical knowledge required in classifying com-

modities and the considerations which determine how articles of freight shall be grouped were well stated in the eleventh Annual Report of the Interstate Commerce Commission. The officials entrusted with the work of making classifications "take into account whether commodities are crude, rough, or finished; liquid or dry; knocked down or set up; loose or in bulk; nested or in boxes, or otherwise packed; if vegetables, whether green or dry, desiccated or evaporated; the market value and shippers' representations as to their character; the cost of service, length and direction of haul; the season and manner of shipment; the space occupied and weight; whether in car-load or less than car-load lots; the volume of annual shipments to be calculated on; the sort of car required, whether flat, gondola, box, tank, or special; whether ice or heat must be furnished; the speed of trains necessary for perishable or otherwise rush goods; the risk of handling, either to the goods themselves or other property; the weights, actual and estimated; the carrier's risk or owner's release from damage or loss. All these circumstances, bewildering as they appear to a layman, are comparatively simple to the expert."

Since 1886 the railroad companies have entrusted the classification of freight to the classification committee in which they are represented—the Official, Southern, or Western. Each company reserves the right to fix the rates charged on each class of freight, and in theory does independently determine the rates; although there is necessarily a large degree of cooperation among competing companies in the making of rates. Each company also reserves the right to keep certain articles out of the classification, and each important company carries a large number of articles at "commodity tariffs." (Consult Chapter IX.) It has never been possible to include all articles within the classification, but the railroads are

trying to reduce the number of exceptions, and as the conditions of interrailway competition become increasingly stable, the majority of the commodities now having a special tariff can doubtless be brought within the classification, although it is probable that some commodities—petroleum, live stock, fresh fruit, etc.—will always require such a specialized transportation service as to necessitate their exemption from classification.

Before the days of pooling and traffic associations each railroad company acted independently in making rates and fares. The schedule of charges was worked out by the officials of the traffic department and accepted with or without amendment by the executive officers of the company; but on competitive business the rate-making was in reality placed by the company in the hands of the local agents and the solicitors of freight, by giving those officials the power to deviate from the scheduled charges if such action was necessary to secure or hold traffic. Every freight-agent was made to feel that he must get business, and the methods he was permitted or expected to employ were often objectionable. Discriminations of many kinds were practised. With the progress of railway cooperation more responsible methods of making and maintaining rates were followed. Through their pooling arrangements and traffic associations the companies sought to unite in fixing and maintaining such charges as seemed reasonable to the several roads concerned. Pooling became unlawful in 1887, and all rate agreement illegal ten years later. Then, in theory at least, it again became necessary for each company to act independently. To secure the maintenance of rates most of the companies sought to place the power of fixing or altering rates strictly and solely in the hands of their higher officers. This had a steadying influence, but did not make deviations from published rates impossible or

improbable. The Elkins act of 1903 prohibiting rebates was necessary.

Charging what the traffic will bear means that no single or fixed theory or principle of rate-making is followed, but that the determination and maintenance of charges are turned over to certain traffic officials, of high or low rank in the service, who are permitted to exercise their judgment as to what will be for the best interest of their company. The interest of the public is of course consulted, but only to the extent that the effect of the charges on the welfare of the public limits or increases the prosperity of the railroad. Whether or not it is practicable to adopt some other rule of action in fixing railroad charges than that of charging what the traffic will bear is open to question; but it is certain that the rule as followed up to the present has not produced altogether satisfactory results. Although secret discriminations are no longer prevalent as they were during years of business depression preceding 1899, published rates may be unjust. This was shown clearly by the investigations of the Industrial Commission, and is also proved by the more specific and searching inquiries made by the Interstate Commerce Commission during the past few years. The causes for unreasonable discriminations are by no means simple, and it is probable that the present laws against railway cooperation are in part the cause of the wrong they are intended to prevent; but the fact remains, whatever the causes, that charging what the traffic will bear does not automatically secure justice to all parties.

The problem of fixing passenger charges differs in several particulars from the task of making freight rates. In the first place, classification in the passenger service is a simple matter, and when once decided upon presents no further difficulty, as does the classification of freight,

which is a perennial question requiring daily consideration. Competition in the passenger service is less keen than in the freight service, and of a different nature. In the freight business it is the rivalry of producers and shippers that does most to force down rates; whereas, in the passenger service no such pressure is exerted. Travelers do not singly, nor collectively, to much extent, bargain for low fares. The ordinary ticket represents a small purchase—averaging barely 64 cents in the United States and much less in other countries—and there is but little incentive for the passenger to endeavor to secure a special fare. Moreover, the struggle among railroad companies to secure the competitive passenger business is far less intense than is their effort to attract freight traffic. The gross revenue derived by the railroads of the United States from their freight business is two and one-third times the receipts from the passenger traffic, and if it were possible to ascertain the net profits attributable to each branch of the service, it would be found that the profits assignable to freight transportation are more than two and one-third times the net profits secured from carrying passengers.

Another reason why the railroads are less eager to secure passenger business than freight traffic, is that reductions in charges—the most usual way of increasing traffic—are less effective in stimulating ordinary travel than they are in increasing freight movement. With the exception of the short-trip excursion travel, the cost of the railroad ticket is but a part, and usually the minor portion, of the expenses of the passenger. Most persons travel for business purposes, and the cost of the railroad ticket has but little weight with them. There is, however, a large and growing amount of traveling for pleasure, and that is capable of stimulation by reduction in rates. Indeed, as was said in the chapter on the passenger serv-

ice, the American railroads have done much less than European experience has shown to be possible in the development of low-fare travel.

Though the struggle of rival lines for the passenger business is less intense and unintermittent than is true of the freight traffic, the railways have always sought to develop their competitive and non-competitive passenger traffic; but the intercompetition of American roads has done more to increase the speed, comfort, safety, and frequency of the passenger service than to lower the fares. Passenger charges have declined somewhat, but relatively little as compared with freight rates. The average earnings per passenger per mile for the railroads of the United States as a whole were but 6 per cent less in 1901 than they were in 1891; whereas, the decline in ton mile earnings had been over 16 per cent. In the year 1906 the passenger mile revenue was the same as it was in 1900—$0.02003. The general effect of interrailway competition in the United States during the past twenty years has been to give the shipper a less expensive as well as a better service, and to give the passenger a higher grade of service without much change in fares.

The traffic officials are usually under less pressure in fixing fares than in deciding on rates. There have been wars over competitive passenger traffic, some of which have been violent; but their effects have been slight as compared with those resulting from wars involving freight rates. Discriminations in passenger charges have been and are fewer and of less consequence than those connected with freight rates. It has been easier for the railways to cooperate in making fares than in making rates.

Transportation charges must be fixed by the exercise of human judgment rather than by the application of precise rules. They should not be subject to change by any one individual, but they should be flexible enough

to meet the requirements of industrial progress. Intelligent and conservative action in fixing and changing the charges would be promoted if each company were to entrust all decisions to a rate committee of three or more men. When the charges relate to joint or competitive business, the rate committee should contain representatives from all interested companies. This the law does not now permit. The charges thus agreed upon should be reviewable by public officials, as most rates and fares now are, at least in theory. When thus determined and published, the charges should be enforced as strictly and honestly as are the fees collected by the state for the public services it performs. No single traffic official should have the power, or be permitted, to deviate from the established rate, whatever may be the competitive conditions with which he is confronted. The committee that makes the rate should alone have the power to change the rate; its action should be made public, and no change should go into effect until the business interests affected have had time to adjust themselves to the proposed change. The ideal adjustment and enforcement of railway charges can not be secured by means of legal penalties alone, although they may be helpful. Custom and ethics are more potent than law. The maintenance of published rates becomes easy when, and only when, the ethical feelings of the public condemn the giving or acceptance of a secret rate for a transportation service.

The tariff policy of the railways of the United States has been determined almost entirely by commercial considerations. This has been so both because the roads are owned by private corporations, and for the reason that the Government has as yet done little to require the companies to construct their tariffs with reference to the accomplishment of political or social aims. The same is true of the railroads of Great Britain; but

in France, although the lines are owned and operated by corporations, the Government has aided the companies largely, and has influenced their tariff policy very considerably. In Austria and Hungary the Governments have nationalized most of the railroads, and have put in force a system of charges intended to increase travel, and to bring the political and commercial cities of the country into closer touch with the outlying portions of their national domain. In the German states, where most railroads are owned and managed by the Government, rates and fares have been fixed with a view to securing a surplus or net revenue, to protecting German industries against foreign competition, to aid in the exportation of German productions, to strengthen the efficiency of the military forces of the state, and to further numerous philanthropic and educational aims. In Australia and India the governments have built roads mainly to promote the industrial development of the countries.

Different policies have prevailed in different countries as regards the state's policy concerning railway tariffs. In all countries, whether the railroads are owned by the state or by corporations, there is a tendency to give increasing weight to social considerations in deciding upon railroad tariff policies. This is true even in the United States, where, until within a few years, the Government permitted the railroad corporations, without state interference, to make such rates and fares as they thought would promote their traffic or revenue.

REFERENCES FOR FURTHER READING

Report of Industrial Commission, vol. xix, pp 349–397.

Weyl, W. E. Causes affecting Rates and Fares. Annals of the American Academy of Political and Social Science, vol. xi, 1898.

Consult also the references to Hadley and Seligman and Weyl at the close of the preceding chapter.

CHAPTER XXI

RAILWAY CHARGES IN THE UNITED STATES AND OTHER COUNTRIES

A STATEMENT of what railway charges now are and what they have been, and a comparison of rates and fares in the United States with those in other countries, might seem to be merely a matter of compilation, but the task is not quite so simple as that. In order to state what the charges now are and to compare those of the present with those of the past, and those of one country with those prevailing in another, two things are necessary: there must be some simple and reliable measure or index of average charges and the charges compared must be for similar services. There must be a unit for the measurement of charges and the things compared must be alike. Freight charges are made for the transportation of thousands of commodities; to study each of these charges separately would be impracticable, and to deal with any considerable number of commodities individually seriously complicates the work of making comparisons between the present and the past, and between different sections of the world.

The unit of distance in railway charges is the mile in English-speaking countries, and the index or measure of general freight rates is the average receipt per ton per mile. For the passenger service the index is the earning or receipt per passenger per mile. Although the "ton mile" and "passenger mile" earnings are the best

measure of what railway charges are or have been, they are only a very general index showing the average of all charges and can not safely be used for making close comparisons. The average earnings per ton per mile are determined by the nature of the traffic as well as by the rate charged. An increase in the tonnage of bulky low-rate traffic would lower the average ton mile earnings, although the charges remained the same. Indeed, it would be possible for a large expansion of the mineral and other low-class freight to more than offset the effect of a slight rise in rates on all classes of traffic. This fact should be borne in mind in comparing the ton mile earnings of the present with those of the past. At the present time mineral products, on which the rates are low, make up over half the total rail tonnage in the United States, and minerals and other low-class traffic have comprised an increasingly large share of the total traffic of the railroads. This means that the decline which has taken place in the average ton mile earnings has been due to changes in the character of the business as well as to a fall in charges.

Likewise, the average ton mile earnings in one country as contrasted with the ton mile earnings in another may be for the transportation of such different kinds of commodities as to make comparisons of little value. Moreover, the services performed by the railroads in different sections of a country and in different countries may be dissimilar. In the United Kingdom, for instance, the freight charges usually include the service of collecting and delivering the goods—a service which the shipper performs in most countries. On some railroad systems freight moves in about equal volumes each way, while on other roads the cars can be loaded only one way. Again, in the United States a passenger may check 150 pounds of baggage free of charge, whereas in some countries nothing but hand-baggage is taken without extra

payment. In some sections of the country the passenger-trains have luxurious appointments and are run at high speed, while in other sections neither comfort nor speed is secured by the traveler. These, and numerous other points that might be cited, indicate the necessity of considering all railroad charges with reference to the service performed, and show that the comparison of the rates and fares of different times and places can suggest, but not definitely measure, the temporal and local variations in transportation charges.

Passenger fares in the *United States* range from about a cent a mile for some kinds of "commutation" tickets up to 4 and 5 cents a mile in the sparsely settled and mountainous sections of the country. The average revenue per passenger per mile for all the railroads in the United States during the year ended June 30, 1901, was 2.013 cents, which was 5 per cent more than it was two years before, and was but 6 per cent less than in 1891. The average for 1907 was 2.014 cents; while the average for 1900 was 2.003 cents.

Fares in European Countries

The standard passenger fares in *England* since 1897 have been 2 pence per mile for the first-class, $1\frac{1}{4}$ penny for the second-class, and 1 penny for the third—about 4, $2\frac{1}{2}$, and 2 cents per mile for the respective classes. There are numerous special kinds of tickets sold—return-trip, tourist, season, and military and working men's tickets—at a reduction of from 20 to 50 per cent from the standard charges. The sale of special and commutation tickets to stimulate travel is a favored policy of the English railroads. There are no statistics showing the average receipts per passenger mile in England, but the amount is probably less than a penny or 2 cents.

The standard fares in *Prussia* are 2.7 cents per

mile first-class, 2.3 cents second-class, 1.53 cents third-class, and 0.77 cent fourth-class (7, 6, 4, and 2 pfennigs per kilometer) for ordinary trains, and on fast trains there is an extra fare charged of a fixed amount, as is true of our extra fare trains. Fares were reduced in 1906, but there is no reduction for return tickets. Fourth-class cars are not run on express-trains. Reduced rates are charged for Sunday tickets, season tickets for workmen traveling fourth-class, for soldiers, and for school-children. There is no free baggage since the tariff of 1906 became effective. The average receipts per passenger mile in Prussia are only one cent. This low average is due to several facts, one being that nine-tenths of the travel is confined to the classes below the second; another reason is that a large percentage of the tickets are sold at special rates; while a third cause is that the railroads of Prussia do a large suburban business that is handled by trolley companies in the United States.

Passenger fares in *France* are appreciably higher than in Prussia, but much lower than those in the United States. There are six systems of roads operated by private companies and one operated by the state, and the fares and average receipts vary with each system. The standard fares are about 4.7, 2.5, and 1.6 cents per mile for the first, second, and third classes. There is no fourth-class, and the rates are the same on local and express trains. The average earnings per passenger per mile in 1905 varied from 1.15 cents on the Northern Railway to 1.29 cents on the Paris, Lyons and Mediterranean road. The average passenger mile receipts for the railways of the country as a whole are about 1.2 cents. Over 90 per cent of the travel is in the third-class, and there is a variety of reduced-rate tickets to stimulate traffic. Sixty-six pounds of free baggage is allowed.

In *Hungary* and *Austria* the so-called zone-tariff system of passenger fares is in force. The zone tariff bases its charges on a longer unit of distance than the mile or kilometer. By Hungary's plan of 1889 the charge on local traffic is the same for all distances up to 10 kilometers (6.2 miles); another and larger charge is made for all distances of more than 10 and not exceeding 20 kilometers. A different rate is paid for a ride from 20 to 30 kilometers long. For the through traffic the charges are based on "zones" of different lengths. The first zone or distance is 25 kilometers, the second and third each 15 kilometers. The first 13 zones comprise a distance of 140 miles. All places more than 140 miles from the place where the passenger starts—and the starting-point may be any station—is in the four-

The Original Hungarian Zone Tariff. Fares for Local and Through Traffic, 1889

Fares (including Government duty).

	Express-Trains. Cents.			Accommodation Trains. Cents.		
	I.	II.	III.	I.	II.	III.
Local traffic:						
Zone 1 (0–6.2 miles)	.....	.....	.....	19.3	9.7	6.4
" 2 (6.2–12.4)	.....	.....	.....	25.7	14.2	9.7
" 3 (12.4–18.6)	.....	.....	.....	32.2	19.3	12.9
Through traffic:						
Zone I (0–15.6 miles)	48.3	32.2	19.3	38.6	25.7	16.1
" II (15.6–24.9)	96.6	64.4	38.6	77.3	51.5	32.2
" III (24.9–34.2)	144.9	96.6	58.0	116.0	77.2	48.3
" IV (34.2–43.5)	193.2	128.6	77.3	154.6	103.0	64.4
" V (43.5–52.8)	241.5	161.0	96.6	193.2	128.8	80.5
" VI (52.8–62.2)	289.8	193.2	116.0	232.5	154.5	96.6
" VII (56.2–71.5)	338.1	225.4	135.3	270.6	180.3	112.7
" VIII (71.5–80.8)	386.4	257.6	154.6	309.2	206.0	128.8
" IX (80.8–90.1)	434.0	289.8	174.0	348.0	231.8	144.9
" X (90.1–99.4)	483.0	322.0	193.2	386.4	257.6	161.0
" XI (99.4–108.7)	531.3	354.2	212.5	425.0	283.3	177.1
" XII (108.7–124.4)	579.6	386.4	231.9	464.0	309.1	193.2
" XIII (124.4–140)	676.2	450.8	274.4	521.6	347.7	225.4
" XIV (over 140)	772.8	515.2	309.1	579.6	386.4	257.6

teenth zone, and the fare is the same for all trips over 140 miles long. If the trip taken is over a route that takes the traveler through Budapest, the capital of the country, the zones are counted from the starting-point only to Budapest, where the counting of zones begins again.

This tariff was modified in 1903 by adding two zones, reducing the width of the first five zones to 10, 5, 5, 7, and 13 kilometers, and by disregarding distance only beyond 400 kilometers.

The charges on express-trains are 20 per cent higher in the third-class and 25 per cent higher in the second and first classes than on accommodation trains. The fares by this system are low, the average earnings per passenger mile being less than one cent (.972 cent in 1906). There is no free baggage, nor are any special reduced-rate tickets sold. When the Hungarian Government adopted the zone system of fares in 1889 the charges were high and the amount of travel small. The change was made to stimulate both local and long-distance travel, and both objects were accomplished.

Austria adopted a zone-tariff system in 1890 similar to the one in Hungary. The first five zones are each 10 kilometers long, the sixth and seventh zones are 15 kilometers each, the eighth is 20 kilometers, the ninth to twelfth inclusive each 25 kilometers, the thirteenth and succeeding zones are each 50 kilometers. The Austrian system is often called the kreutzer tariff, because the rates are based on a charge of 1 kreutzer (0.406 cent) per kilometer for the third-class. The fares change with each 10 kilometers. In the first zone of 10 kilometers, for instance, the charges are 10, 20, and 30 kreutzers for the third, second, and first classes on slow trains, and 15, 30, and 45 kreutzers for the three classes on express-trains. The fares for single tickets are shown by the following table:

Austrian Zone Tariff of 1890

Zones.	Kilometers.	ACCOMMODATION AND MIXED TRAINS.			EXPRESS-TRAINS.		
		Third Class.	Second Class.	First Class.	Third Class.	Second Class.	First Class.
		Kreutzer.	Kreutzer.	Kreutzer.	Kreutzer.	Kreutzer.	Kreutzer.
1	1– 10	10	20	30	15	30	45
2	11– 20	20	40	60	30	60	90
3	21– 30	30	60	90	45	90	135
4	31– 40	40	80	120	60	120	180
5	41– 50	50	100	150	75	150	225
6	51– 65	65	130	195	98	195	293
7	66– 80	80	160	240	120	240	360
8	81–100	100	200	300	150	300	450
9	101–125	125	250	375	188	375	563
10	126–150	150	300	450	225	450	675
11	151–175	175	350	525	263	525	788
12	176–200	200	400	600	300	600	900
13	201–250	250	500	750	375	750	1,125
14	251–300	300	600	900	450	900	1,350

No baggage may be checked free in Austria, and this is a fact that should be kept in mind in comparing the rates of such countries as Hungary and Austria with the United States or England. Special rates made to parties, to school-children, and to officials reduce the average earnings per person per mile on the Austrian railroad considerably below the standard fares—the receipt per passenger mile in 1906 was 0.89 cent. Rates rose 6 to 12 per cent in 1903.

Without going further into details regarding other European countries, each of which has a system of passenger charges peculiar to itself, the general statement may be made that the average passenger fares in the leading countries of Europe are much lower than in the United States; are indeed but one-half to three-fifths those prevailing in our country. In Russia the average receipts per mile are only .75 cent. There are several reasons why fares are cheaper in Europe than with us, but the main reasons are the density of the population and

the large volume of travel in most parts of Europe, and the fact that several different grades or classes of service are rendered by the railroads. The roads meet the large demand existing in Europe for a cheap service by running slow trains made up of inexpensive coaches. About nine-tenths of the people travel in the third, or a lower, class, and most of the traffic is handled by the slow trains. The European trains are lighter than the American, and the seating capacity of the cars is better utilized. The cheapest fares in the world seem to be in India, where the average receipts per passenger mile are less than one-half a cent, and this is because the people are willing to travel slowly, do not mind waiting at the stations, and are willing to be crowded into coaches without the comforts demanded by the people of most countries.

Passenger fares have declined much more rapidly in Europe than in the United States. The European railroads have developed the lower classes of traffic very successfully. The trend of traffic there has been from the higher and more expensive classes to the third and fourth classes. At the same time there has been a rapid increase in the volume of travel. In the United States the conditions have been less favorable than in Europe for the development of the passenger traffic, but it seems probable that much more can be done than has yet been accomplished. When the railroad companies make it possible for the masses of people in the United States to travel inexpensively, the volume of business will grow rapidly.

Freight Rates

As regards freight rates, the facts are quite the opposite of those concerning passenger fares. The charges for freight are much lower in the United States than in Europe, and the decline has been more rapid. The average revenue per ton per mile received by the railroads

in the *United States* as a whole in 1901 was but three-fourths of a cent. Ten years earlier the average was 0.895, the decline during the decade having been 16 per cent. From 1881 to 1891 the decrease was nearly 25 per cent. From 1871 to 1881 the average fell fully one-third. The average ton mile earning in 1901 was barely 40 per cent that of thirty years earlier. The lowest average was in 1899, 0.724 cent; in 1907 it was 0.759. For ten years, ending in 1907, the prosperity of the country was such that the chief problem with American railroads was not how to secure business, but how to handle the traffic offered to them. Instead of lowering rates to increase shipments, charges were maintained or advanced. This situation was temporarily ended in 1907, but rates were not lowered; indeed, rates were raised in the latter half of 1908.

The British statistics do not show what the railroads of the *United Kingdom* earn per ton per mile for their freight service. It is estimated to be somewhat more than 2 cents. The conclusion is not to be drawn from this, however, that the average freights are two and two-thirds those in the United States, because the English companies, unlike those in the United States, frequently include in their service the collection and delivery of goods at the terminals. Freight rates in the United Kingdom are unquestionably considerably higher than in this country, but how much higher can not be stated.

The average earnings per short ton (2,000 pounds) per mile on the *German* railroads in 1906 was about 1.20 cents, and on the railroads of *France* about 1.55 cents. The European freight rates seem very high in comparison with American charges. In Prussia the standard rates per short ton per mile (not including terminal charges) for shipments of less than 10 tons are from 3.80 cents to

2.08 cents, according to the length of haul. For car-loads of 10 tons or more the rate is 1.21 to 2.30 cents. The charges are about double these for the fast freight, which in general includes both our express traffic and our fast freight service. The standard charges in reality apply to only one-fifth of the railroad traffic of Prussia. About 17 per cent of the total traffic is handled at what are called special rates—corresponding closely to our commodity tariffs. The remaining 63 per cent of the traffic receives the so-called "preferential" tariffs, which are described officially to be "applicable to agricultural and industrial products, and intended to assist and facilitate import and export, and increase the traffic of the country." These preferential tariffs are employed as a bounty to enable certain sections of Germany to export their products; as an export bounty on the trade of Germany with the countries about the eastern Mediterranean; as an aid to ship-building; as an aid to manufactures by cheap rates on fuel; and as a means of relieving the distress of any portion of the country that may suffer from floods or bad harvests. In France the normal tariffs of the several railroad systems are different, and there are special rates in force on each system. The standard or normal charges are particularly high, but their effect upon the average ton mile earnings of the companies is largely overcome by the special tariffs which apply to the larger share of the traffic.

Shortly after the passenger zone-tariff system was adopted, *Hungary* and *Austria* applied the zone principle to the freight business. Charges are based on a unit distance of 10 kilometers (6.2 miles), the rate being per 10 kilometers instead of per single kilometer. The charges for long distances are proportionately less than for short ones, and the rates vary with the class and quantity of goods shipped. The classification, however, is a simple

one, and there are but few exceptions to the classification. The receipts per ton mile for ordinary freight in 1906 were 1.42 cents on the Hungarian state roads, and 1.43 cents on the Austrian state roads. If the express freight receipts be included, the average will be raised to about 1.45 cents.

Some of the causes accounting for high passenger fares in the United States serve to explain why freight charges can be low. Long distances deter travel and make the passenger service expensive for the carrier. In a country where the population is relatively sparse there will be a comparatively small amount of passenger travel; but if that population is engaged in raising great quantities of live stock, grain, and cotton, in cutting lumber and mining coal and iron and other minerals, as is true of the American people, there will be a heavy tonnage of freight to be moved long distances in large shipments. The economic conditions favor as well as require low freight costs in the United States. The average distance traveled by a ton of freight in the United States in 1906 was about 241 miles. In Germany the average haul is 72 miles, in France about 76 miles, on the Austrian state railroads 80 miles, in Italy about 70 miles. The figures for the United Kingdom are not given in the statistics of that country. The freight rates on the bulky traffic carried by the American railroads must be low, and can be low, because such a large share of the tonnage is shipped in car-load and train-load lots hundreds of miles.

Wages are higher in the United States than in Europe, but the American laborers are more efficient and there are fewer employees per mile of road in the United States than in Europe. Fuel is generally cheaper here than abroad. However, the most important causes of low rates have been influences which have resulted in the superior technical efficiency of the American freight

service as compared with that in European countries. In order to develop tonnage in this country the railroad companies were compelled to reduce movement costs to the lowest possible level. They were also spurred to economy by the severity of competition which in a variety of forms has affected their policy at all times. Competition has not been absent from any European country, and its effects on freight charges in such countries as Germany and Austria are particularly noticeable, but the stress of rivalry has been far greater in America than in Europe.

The facts presented in this chapter fully warrant the general deduction that passenger fares are relatively high and freight rates are relatively low in the United States as compared with Europe; but the figures presented for different countries in the above paragraphs, as was stated at the beginning of the chapter, do not cover identical services. The comparisons must be general and can not be made closely accurate.

REFERENCES FOR FURTHER READING

Statistics of Railways in the United States. Annual Report by the Interstate Commerce Commission.

Report on Prussian Railways. British Diplomatic and Consular Reports, No. 574, Miscellaneous Series, London, 1902.

Weyl, W. E. The Passenger Traffic of Railways. Publications of the University of Pennsylvania.

Hole, J. National Railways, London, 1893, ch. viii.

Report of Industrial Commission, vol. iv, p. 758; vol. ix, pp. 137–139.

Archiv für Eisenbahnwesen. [This journal is the most satisfactory source of information regarding railway earnings.]

Huebner, G. G. Prussian Railway Rate Making and Its Results. Annals of the American Academy, vol. xxix, March, 1907, Philadelphia.

Hoff, W., and Schwabach, F. Nordamerikanische Eisenbahnen, Berlin, 1906.

PART IV

THE RAILWAYS AND THE STATE

CHAPTER XXII

PUBLIC AID TO RAILWAY CONSTRUCTION

The government's relation to the railroads is necessarily twofold: that of aiding and of regulating or controlling. The extent and form of the assistance given by the state to railroad building and operation varies with different countries. The people of some nations prefer to have their railroads built and managed directly by the government; in other nations the preference is for the construction and control by corporations chartered by the state; but even in the latter case the aid of the state is necessary. The state must grant to the corporation "the right of eminent domain" in order to enable the corporation to secure the real estate required for its roadway and structures. Besides aiding the corporation in this manner, the government—local, state, and national—has frequently contributed or advanced a part of the capital required by the company for construction purposes, and in some foreign countries the state has guaranteed to private investors a stipulated minimum rate of interest or dividend on their investments.

Regulation, likewise, is slight in some countries and complete in others. Sometimes the railroads are controlled by corporations that are allowed by the state to manage their affairs with but little interference; some countries supervise and regulate the companies in a detailed and thorough manner; and some governments operate the railroad as a state enterprise, and thus have abso-

lute control over them. The tendency, as we shall see later, is everywhere either toward a more careful public regulation of private roads or toward the nationalization of the railroads and their management by the government.

Aid Given by the American States to Railroads

The railroads in the United States, though built mainly with private capital, were aided by many of the States, by the National Government, and to a large extent by county and city governments and by individuals. The States began actively to construct or aid in building railroads in 1837, although a few of the States had given assistance prior to that date. State aid to railroad building was a part of the policy of Government aid to works of internal improvement. The construction of canals and turnpikes, as has been noted in a previous chapter, had been assisted by the States after 1815. When the railroad had shown itself to be an efficient transportation agent, there at once arose a demand which was especially strong in the States whose industrial development was least advanced for a rapid construction of railways. The States responded to this popular demand not only because there was a demand for transportation facilities for the development of the resources of the country, but also because it was supposed that the Government could raise the funds for the construction of the railroads with very little effort. During the years which preceded and followed the panic of 1837 it was supposed by many of the States that banking institutions could create capital. The banks were regarded as institutions by means of which credit could be extended, and the faith of the people in the development of the resources of the country was such that they thought the credit created by the banks could, without difficulty, be made actual capital. At the

time this fallacy was prevalent the national revenue from the sale of public lands was especially large, and the United States Government accumulated between 1830 and 1837 a considerable surplus, which it unwisely decided in 1837 to distribute among the States. This distribution of the surplus revenue by the National Government stimulated the establishment of unsound banking institutions, and caused the States to go further and faster with their policy of aiding railroads than they otherwise would have gone.

The assistance given by the States to railroad construction most often took the form of the purchase of the stocks of railway corporations. Sometimes bonds were purchased, and sometimes there was a donation of State funds, either as cash or State securities. The aid given by the State was regarded more as loans than as gifts, but, as a matter of fact, the investments or advances made by the States were only partly paid back. Several of the States engaged directly in the construction of railroads. Other commonwealths, particularly after 1850, made large grants of public lands to the railroad corporations, the lands thus granted having been received by the States from the National Government.

The amount of aid given by the States to railroads can not be stated precisely, but the figures available indicate that the total donations were large. The entire debts of the States in 1841 exceeded $231,000,000. These debts had been contracted partly for the purpose of assisting banking institutions, which had received not less than $50,000,000, and partly for the construction of works of internal improvement. Of the State funds used in promoting internal improvements, the amount paid out on canals and turnpikes much exceeded the amount expended on railroads. But the sum contributed by the States for railroads in the West, and more especially in the South,

after 1841 was greater than the amount given before that date. The State of Missouri, for instance, which spent nearly $32,000,000 on railroad construction, of which sum only a little over $6,000,000 was ever again obtained by the State, granted very little aid before 1850. Tennessee incurred a debt of $29,234,000 by aiding railroads; of this sum over half was contracted after 1860. North Carolina had a similar experience. Of the New England States, Massachusetts was the only one that aided railroad building, her assistance amounting to $6,044,000. There were nineteen States in all which gave or advanced public funds for the construction of railroads, Illinois, Indiana, Michigan, Georgia, Tennessee, North and South Carolina, Missouri, Virginia, and Louisiana being those which contracted the largest debts to help the building of railroads.

The aid given by the American States to railroad building accomplished small results. In most of the States concerned there was little appreciation of the necessity for adhering to conservative fiscal methods. Many of the enterprises aided by the States were of relatively small importance. The States granted their credit lavishly, with little concern for the method by which the securities issued were to be paid. In due time it was discovered that banks could not create capital, and that railroads could not immediately develop the resources of the sections through which they were built, and that the ability of the States to raise funds by taxation did not increase so rapidly as the debts of the States were enlarged. In nearly all cases the railroads constructed by the States were sold out to corporations for but a small fraction of what had been expended upon the roads. Several of the States, moreover, decided to repudiate the debts, and on the whole the connection of the States with banking institutions and with works of internal im-

provement constitutes a regrettable chapter in the history of American finance. The funds expended, however, were by no means altogether wasted. Railroads were constructed earlier and more rapidly than they could have been built by private capital, and the resources in many parts of the country became available sooner than would otherwise have been the case. The corporations which acquired the roads obtained the larger share of the benefits, but the general public was assisted to some extent by the lavishness of the States in aid of railroad building.

National Aid to Railroad Construction

The National Government began assisting railroad construction later than the States, but it has contributed even more than they have given. Most of the aid given by Congress to the railroads has consisted of grants of land from the public domain, although a few companies received large loans from the Federal Treasury. The first extensive grant of land to further railroad building was made in 1850, when Congress gave to Illinois, Alabama, and Mississippi about 4,000,000 acres of land to be used by those States in aiding the construction of the Illinois Central and the Mobile and Ohio lines, by which Chicago was to be connected with New Orleans and Mobile. During the next twenty years about eighty such grants were made to the States in the Mississippi Valley.

In aiding the construction of roads built within the boundaries of the States, Congress for some years did not donate land directly to corporations, but gave the land to States as trustees, which were to turn the land over to the railway companies. The tendency in the fifties was to interpret the Constitution more narrowly than it has been interpreted since the civil war, and many persons questioned whether Congress had the power to donate land located within a State to a railroad corporation.

When, in 1862 and later, the occasion arose for aiding companies to build lines through the Territories, Congress did not hesitate to make grants directly to the corporations; and after the civil war grants were made to companies from lands within the States.

The first direct grants to corporations were made in 1862 to secure a road from the Missouri River to the Pacific Ocean. For a score of years Congress had been urged to aid in constructing a road to the Pacific, but action was delayed from time to time, mainly because of the rivalry of the Southern and Northern States as to the route to be chosen. After the Southern States seceded Congress was able to act, and the civil war greatly increased the need of rail connection between the western part of the country and the section east of the Rocky Mountains. Military and political as well as economic reasons then impelled Congress to act.

In making these grants to railroads the United States sought, among other purposes, to increase the accessibility and value of the public lands not given away. The grant to Illinois for the Illinois Central Railroad—the first large one—was the model followed in all the subsequent donations; some companies received more land per mile of road than others did, but all the grants had the same general terms. According to the Illinois grant, the railroad company was given a right of way 200 feet wide through the public lands, and was also given alternate (the even-numbered) sections of land on each side of the line for a distance of 6 miles from the road. The company thus secured half the land within a strip 12 miles wide, or 6 square miles of land, for each mile of track built. If any of the land within this 12-mile strip had previously been disposed of by the Government, the railroad might select an equal area within 15 miles of the railroad. The alternate (odd-numbered) sections retained

by the Government within the 12-mile strip were not to be sold for less than $2.50 an acre. In the grants made at a later date a wider strip of land was donated, and in some cases the Government did not agree to charge $2.50 or more an acre for the sections it retained within the land-grant strip.

The grants made from 1862 to 1871 to aid the building of roads from the Mississippi and Missouri Rivers to the Pacific Ocean were for several reasons larger than those previously made. The lands given away were less valuable than those located within the States near the Mississippi River, while the cost and difficulties of building the roads over the Rocky Mountains would necessarily be greater than they had been in the Mississippi Valley. Congress, moreover, had grown more liberal than it was during the fifties. By the act of 1862, as amended in 1864, the Union, Kansas, and Central Pacific Companies, and the three other corporations which undertook to build the first tracks from the Missouri River to the Pacific Ocean, were given 10 square miles of land for each mile of line. The grant to the Union Pacific, the company which built the road from Omaha to Ogden, amounted to 12,000,000 acres. The grant to the Central Pacific Company, which constructed the track between Sacramento, Cal., and Ogden, was 8,000,000 acres. The company which later came to have the name of the Kansas Pacific Company was granted 6,000,000 acres, and the other companies concerned in building this first Pacific connection were to receive nearly 7,000,000 acres. Thus 33,000,000 acres, a gift of an area considerably larger than the State of Pennsylvania, was offered by Congress to induce corporations to build the first railroad across the Western plains and mountains. In addition to this gift these corporations received a large loan of funds from the United States.

The Atchison, Topeka and Santa Fé received a grant of 3,000,000 acres in 1863, and three years later the Atlantic and Pacific Railroad, which is now a part of the Atchison system, received a grant of 42,000,000 acres—a grant of enormous area but of relatively small value. Much of this grant reverted to the United States by forfeiture. In 1864 a grant of about as great area and of much greater value was made to the Northern Pacific. The roads now comprised in the Texas and Pacific received nearly 23,000,000 acres, and the Southern Pacific obtained 14,000,000 acres. The grants made to each of the last four companies mentioned comprised 20 sections of land per mile of road in the States and 40 sections per mile in the Territories.

During the ten years ending in 1871 Congress made grants to 23 companies. The grants made between 1850 and 1871 have placed at the disposal of the railway companies about 159,000,000 acres of the public domain—an area exceeding five States like Pennsylvania. The original grants made available for sale by the railroad companies a larger area than this, but parts of the grants reverted to the United States, and less than 159,000,000 acres will actually pass to the railroads, because in many instances the companies have not been able to comply with the conditions imposed in the grants. The companies were granted a certain number of sections of land per mile of line constructed, but could claim the land or receive a "patent" from the United States only after completing a designated mileage of track—20, 25, or 40 miles—i. e., as each stretch of track of designated length was completed the land corresponding to that mileage might be claimed. The companies have not received all the land to which their work of road construction entitles them. The United States now annually gives the companies patents to large amounts of land. Most of the companies

failed to complete their lines within the time fixed by the grants, and some of the contemplated roads were never built. However, a failure to finish a road within the time set by law was held by the Supreme Court not to work a forfeiture of the grant without an act of Congress declaring the grants forfeited; indeed, only about half of the mileage to which the donations of land applied were completed within the legal time limit, and many companies were allowed to continue construction and to secure the land corresponding to the new mileage after the period set by law for securing the benefit of the grants had expired. The total amount of land secured by the railroads from the Federal Government up to June 30, 1907, was 110,320,440 acres; and the companies are entitled under their grants to receive several million acres more. The General Land Office of the United States is unable to state just how many acres will be patented in adjusting all the grants. The original grants applied to about 15,000 miles of railroad.

During the seventies there developed a strong popular sentiment against the granting of public land to railroad corporations, and an agitation was started to influence Congress to declare all the land forfeited that had not been earned by the construction of lines within the time stipulated in the grants. Congress acted regarding a few grants during the eighties, and in 1890 passed a law providing for the forfeiture of all lands "opposite to and coterminous with the portions of any such railroad not now completed and in operation." The lands now being claimed by the companies are for mileage finished prior to the passage of that law. This agitation for the repeal of the land grants was due in part to the popular feeling against railroads that developed in connection with the effort to subject railroad corporations to public control; but the demand for the repeal of the land grants

came mainly because of the conviction that the public domain should be disposed of only to settlers or "homesteaders," and in small tracts of 160 acres.

The companies which built the first Pacific road were aided by a loan of United States funds as well as by donations of public lands. By the act of 1862, as amended in 1864, the United States Government permitted the Union Pacific and Central Pacific and certain other smaller companies to sell United States thirty-year 6-percent bonds to secure a part of the capital to be used in building the roads. As each section of 20 miles was completed the railroad companies received these bonds to the amount of "$16,000 for each mile east of the eastern base of the Rocky Mountains and west of the western base of the Sierra Nevada, $48,000 for each of the 150 miles west of the eastern base of the Rocky Mountains and 150 miles east of the western base of the Sierra Nevada, and $32,000 for each mile intervening between the two mountain sections." As security for the repayment of the loan, the United States, by the act of 1864, took a second mortgage on the roads aided. The companies were allowed to sell their own bonds and to issue a first mortgage equal to the amount of the Government's second mortgage. The United States expected the companies to pay the interest and the principal of the Government loan by applying 5 per cent of their net earnings to that purpose, and by carrying the Government's mails, troops, and military supplies.

The Government bonds received by the Union Pacific Company amounted to $27,236,512, those obtained by the Central and Western Pacific Companies to $27,855,680, and those by the company now called the Kansas Pacific to $6,300,000. Two other companies received bonds to the value of $3,228,320, making the total sum originally advanced by the Government to the 6 com-

panies $64,623,512. The incomes from the operation of these roads were much less than had been expected, and the net earnings were either non-existent or so small that the companies were unable to pay interest on the Government bonds they had received, and the debts of the roads to the United States rapidly grew larger. In 1878 Congress passed the Thurman act providing for a sinking-fund to be managed by the Government and requiring larger payments from the companies; but the debts to the United States continued to increase. The United States effected a settlement with the owners of the Union Pacific in 1897, and was fortunate in obtaining the full amount advanced as principal and interest, thus losing only the interest on the interest payments. The settlement with the Kansas Pacific, which was made in 1898, was less advantageous; the United States secured the return of the principal of the bonds and about one-eighth of the amount paid as interest. The indebtedness of the Central Pacific Company, principal and accumulated interest, amounted to $58,812,715 at the beginning of 1899, at which time an arrangement was made whereby this sum was funded into 20 promissory notes bearing 3 per cent interest, one note being payable each six months for ten years. For many years it seemed certain that the United States must lose the greater share of the large sum it had loaned to these companies, and such would have been the result had the Government not had the good fortune of bringing about a settlement at the beginning of a period of business prosperity. This experience of the Government in aiding private corporations was so unsatisfactory that Congress will probably not soon care to repeat the experiment.

In granting the public lands and loaning its bonds to corporations to further railroad construction, the National Government sought to accomplish several pur-

poses: one was to secure better transportation facilities for the mails and troops of the Government; another object was to connect the Mississippi Valley with the States beyond the Rocky Mountains; another reason was the desire of the Government to promote the settlement of the country, and thus to increase the wealth and strength of the people of the United States. The Government, moreover, acted as a landlord with an immense tract of land having very little value. A part of this large tract of land was given away in order that the land retained might possess a greater value. The policy of giving away the public domain to corporations has been much criticized. Unquestionably the United States was more liberal than it need have been, and if the public had chosen to wait twenty years the railroads in the central West and between the Mississippi Valley and the Pacific Ocean would have been constructed by private capital. The liberal donations of public land caused the railroads in that section of the country to be built earlier than they would otherwise have been constructed, the West was settled up more quickly, and the Government has been able to dispose of many parts of the domain it did not give away at an earlier date, and possibly more advantageously than they could have been sold had none of the land been given to the railroad corporations.

As we now view the matter in retrospect, it seems that Congress was too eager to dispose of the public lands. The existence of an unoccupied public domain upon which those may draw who are seeking homes and an independent position industrially and socially is an advantage to society which we are coming to appreciate more fully as the new lands available for settlement are rapidly decreasing in area, accessibility, and fertility. As the question appeared to Congress from 1850 to 1870, the necessity for greater transportation facilities than un-

aided private capital was disposed to provide seemed imperative. The United States had a vast unoccupied domain that would be of little value to the country until settled; and Congress decided to hasten the occupation of the West by aiding railroad companies. Had the policy of land grants been carried out in a more conservative manner, the results obtained might probably have been secured at less cost to the public.

County, Municipal, and Individual Aid to Railroad Building

The contributions made by municipalities and counties can not be stated exactly, but enough figures are available to show that the total amount must have been large. According to the census of 1870, there were then outstanding $185,000,000 of county and municipal bonds which had been issued to aid railroads. What additional amount of bonds had been paid off and canceled prior to 1870 is not known, but probably the sum was considerable. In the State of New York the county and municipal subscriptions amounted to about $30,000,000, and in Massachusetts the towns voted $2,350,000 toward railroad construction. In 1873 the Railroad and Warehouse Commission of Illinois addressed a circular letter to each of the county clerks in the State requesting them to report how much aid had been voted and issued by the counties and towns to railroads. Replies were received from 86 of the 102 counties of the State, and it was reported that in those 86 counties the bonds and money voted and issued equaled $16,087,027. This would indicate that nearly $20,000,000 of aid had been given to the railroads by the local governments in Illinois. Local aid to railroads was general in all parts of the United States, and in view of the fact that the counties and towns of Illinois and New York gave nearly $50,000,000, the total

county and town aid given in the entire country probably amounted to several hundred million dollars.

These large sums were voted by the counties and towns in the new sections of the country because their material progress depended entirely upon their securing access to markets. People thought themselves justified in making large sacrifices to secure good transportation facilities at an earlier date than they could be obtained by depending on unaided private capital. Generally speaking, the thought was a correct one, but the corporations in some instances secured larger amounts than the public need have given to have secured the railway desired. A favored method by which companies secured a large bonus was that of surveying two alternative routes—a route through each of two rival towns—for the purpose of getting the towns to bid against each other for the railroad.

The companies secured capital from individuals as well as from the counties and municipalities. The farmers and merchants living along the line of a proposed road, particularly in the central West, were persuaded to purchase stock of the corporations proposing to build. In some cases the stocks thus purchased were good investments, but in other instances the companies were so financiered during the period of construction that bankruptcy and reorganization followed close after the completion of the road, and partially or wholly destroyed the value of the stocks held by the local purchasers. The persons who benefited by these reorganizations consisted largely of Eastern capitalists, against whom the farmers, merchants, and business men in the towns of the central West came to feel very bitter. Moreover, having thus lost a large part of their investments, the local contributors felt that they were entitled to favorable rates, but they presently found that they were charged higher rates

and fares than were the shippers living in the large cities where the carriers were subject to competition. This discrimination against the local shipper intensified the antagonism of the public to the management of the railways, and brought about the enactment of laws regulating rates and fares and the other relations of the railways to the public. The fact that the public had aided the companies to build their roads accentuated the demand for public regulation.

REFERENCES FOR FURTHER READING

MILLION, J. W. State Aid to Railways in Missouri. University of Chicago Press, 1896. [This scholarly volume also contains a brief account of the aid given by the Southern States, pp. 196–201.]

Scribner's Statistical Atlas. [Consult map and text regarding land grants.]

SANBORN, J. B. Congressional Grants of Land in Aid of Railways. Bulletin of the University of Wisconsin, No. 30, Madison, Wis., 1899.

DAVIS, J. P. The Union Pacific Railway, 1894. [A detailed and valuable work.]

CRAWFORD. Crédit Mobilier of America.

DONALDSON, THOMAS. The Public Domain, 1884. [In this bulky volume, published as a Government document, are collected most documents relating to the public domain.]

Annual Report of the Commissioner of the General Land Office.

CHAPTER XXIII

RELATION OF THE RAILWAYS TO THE STATE IN THE UNITED KINGDOM AND FRANCE

TRANSPORTATION being a service of a public nature, it is the duty of the government to regulate its performance. This regulation may be accomplished by state ownership of transportation agencies or by the governmental supervision of those agencies in the ownership and under the management of private persons or corporations to whom the state may have entrusted the business of transportation. Some transportation agencies are invariably owned by the government; in regard to the others the practise of the different states varies. The postal service, for instance, is everywhere a state monopoly, the highways are usually supplied by the government; but the telegraphs and railroads are owned and operated sometimes by the state and sometimes by chartered corporations.

State ownership gives the government complete power of control; and the question of regulating transportation becomes one of defining and adhering to the proper policy which the government should follow in managing the agencies which it owns. However, when one comes to analyze closely the principles which should prevail in the relations of the government to railroads and other transportation facilities, it becomes evident that whether the transportation service is performed directly by the state or its execution is entrusted by the state to individuals and to corporations,

it is equally the duty of the state to make sure that the service shall be so performed that the greatest possible measure of justice may be secured by each citizen. The ideal of the greatest good to the greatest number must everywhere pervade the service; if the state performs the service it must follow that ideal in its management; if corporations act for the state, they must be required by the state to adhere to that general principle. Unrestrained individualism in railway management is a principle which corporations can not be permitted to follow.

The history of the relations of the railways with each other in our country, an account of which was given in preceding chapters, shows very clearly that the state can not safely rely upon the competition of privately owned railroads with each other to regulate transportation by rail. The general adherence of the American public to that fallacy during the first four decades of our railroad history resulted in the origin and development of most of the objectionable practises which to-day constitute the so-called "railway problem." Moreover, experience also shows that the public must give heed to the manner in which the state performs its service when the railroads are owned and operated by the Government. When a state owns a part of the railway net of a country and competes with private companies, it is tempted to resort to the practises commonly adopted by competing companies. If the state manages all the railway lines, its railway policy may be determined with regard to the fiscal needs of the government, or may be made a part of a system of protecting home industries, or the railroads may be built and operated so as to further the military power of the country. These may all be worthy purposes, but they prevent the development of the transportation system best adapted to general economic needs of the country. In other words, the

state may not make the technical development of its railroads and the increase of the mileage and the facilities the first considerations, as corporations would.

Although some form of governmental control of railroads is now universally recognized to be a necessity, it is by no means easy to decide what form of control will most conduce to the public benefit. Whether the regulation of railway transportation by our Federal Government and the States should take the form of the purchase and operation of the railroads under their jurisdiction is a question that has been much discussed. It is, indeed, a difficult question, and, before considering it, we will do well to review the relation of the railways to the state in some of the larger foreign countries, and study our own experiences as regards railway regulation.

The state's relation to railroads may take one of four different forms: (1) Private ownership and private operation of railroads, the state chartering corporations to act as its agents for the performance of railroad transportation; (2) private ownership and government operation, the state leasing the lines from the corporations which have invested the capital in building the roads; (3) government ownership and operation; (4) government ownership and corporate operation, the state leasing its roads to corporations. The workings of each of these four forms of relationship have been illustrated by the experiences of one or more important countries.

Among the foreign countries that have followed the policy of private ownership and operation are the United Kingdom and France. They have carried out the principle in different ways, and the results of their experience seem especially worthy of study by those who wish to understand and pass judgment on the American policy of railroad regulation. The system of regulation prevailing in the United Kingdom is more instructive for us

than that of any other foreign country, because our laws concerning railroads have been modeled in large measure after those of England.

Unlike most countries, *Great Britain* did not aid private corporations in the construction of railroads. The country was so thickly settled and the volume of business available for rail transportation was so large that it was practically certain that the railroads when built would secure a remunerative traffic. Private capital was more than willing to provide all the funds needed. Indeed, the British Government felt that the country was so well supplied with transportation facilities by its close network of canals and improved highways that a company proposing to build a railroad was required to convince Parliament of the public necessity for the new road. One of the large items of expense to the railway companies has been the cost of getting a charter from Parliament. The money thus spent went mainly as fees to attorneys who were employed to inform the parliamentary committees as to the desirability of the proposed work.

The people of Great Britain have never seriously thought of nationalizing the railway system of their country. The only act of Parliament in which that policy found expression was passed in 1844, when the Government inserted in an act affecting railroads a clause reserving to itself the right to purchase the railroads after a period of twenty-one years. This idea never found expression in subsequent legislation, and thus did not become a part of English policy. In 1844 there was a tendency on the part of certain foreign countries, particularly Belgium, to provide for the future government ownership of railroads. The British act of that year was merely an indication of the general tendency of the times.

At the time of the introduction of railroads into the

United Kingdom there was general adherence to the doctrine of non-interference on the part of the state with economic activities. It was thought that the state should leave industry and transportation alone, and that competition among rival producers and carriers would regulate prices and charges in a satisfactory manner. Parliament thought it might be possible for the owners of the railroads to charge those who used the lines more than would be just, and so in the first charters the maximum "tolls" that might be charged were stated. The charters were drawn in that manner because they were copied, with little modification, from the charters that Parliament had for many years been granting to turnpike companies. The railroad was thought to be only an improved highway, and it was expected that those who used the railroad would, in part at least, furnish their own vehicles. The railroad company, it was expected, would furnish the track, would supply a part of the traction power, and possibly act to some extent as a carrier, using its own vehicles. It was expected, however, that shippers would usually prefer to provide their own cars and wagons. Although the charters contained a schedule of maximum tolls, Parliament thought that the competition of railroads with each other and of different carriers over the same line would be the chief force for the regulation of transportation charges.

Before a decade had passed, it was seen clearly that the railroad and tram-road were very dissimilar, and that the maximum tolls inserted in the original charter had exerted no influence whatever upon railway charges. The railroad companies became the exclusive carriers over their own lines.

In the earlier years competition among the roads was active, but the rival companies soon began to amalgamate or consolidate their properties so as to limit this rivalry

for business. The rapid progress of these consolidations alarmed Parliament, and before 1850 it was clearly understood that the shippers and the traveling public could not safely rely on competition among rival companies for protection either against exorbitant charges or unjust discriminations.

Numerous laws were passed by Parliament to check the consolidation of roads, but these laws were of practically no avail. The Government then decided upon the legal regulation of the relation of the carriers and the public. In 1840 and 1842 the Board of Trade was given general supervision over the railroads, and in 1844 and in 1846 a commission was appointed to assist in the enforcement of the laws applying to railroads. The commission of 1846 was in existence for five years, but it possessed so few powers that it accomplished very little, and it was not continued after 1851. After making an elaborate investigation in 1852–'53, Parliament passed a general law in 1854 for the regulation of railroads. This law prohibited the railroads from exacting exorbitant charges, required them to afford all reasonable facilities, and prohibited them from giving "any undue or unreasonable preference or advantage to or in favor of any particular person or company or any particular description of traffic in any respect whatsoever."

The enforcement of this law was left to the general machinery of the courts, to whom any one having complaint to make was obliged to apply. There was no provision made for a Government commission to assist in the enforcement of the law. For this reason, principally, the law was of comparatively little effect. The process of securing justice or reparation through the courts was such a slow and expensive one that shippers having grievances did not attempt to compel the railroads to observe the law. This act of 1854 has influenced subsequent legisla-

tion in England and the United States. The first three sections of the interstate commerce law of the United States (the act of 1887) were taken, with but little change, from the British act of 1854.

Finding that the public was not appealing to the courts for enforcement of the provisions of the law of 1854, and also observing the continued tendency of the railroads to consolidate and to cooperate in the making of rates, Parliament in 1873 passed a law establishing a board of three railway commissioners. It was stipulated that one of the members should be a lawyer and another should be a man who had had practical experience in the railway business. The primary purpose of establishing this commission was to provide a board to whom any one who had a complaint against the railroads might, without expense to himself, appeal for aid in enforcing the act of 1854. Complaints were made in large number to the commission, and although the board had originally been established for a period of only five years, its life was continued from time to time until the passage of the act of 1888, when the commission was made a permanent body with enlarged powers. Under the act of 1888 the commission consists of the two men appointed upon recommendation of the president of the Board of Trade. One of these two appointed members must have had experience in the railway business. There are also three *ex-officio* commissioners—one for England, one for Scotland, and one for Ireland—consisting in the case of each country of a judge of a superior court. When the commission sits in England it consists of the two appointed members and the English judge; when in Scotland, of the two appointed members and the Scotch judge; and likewise in Ireland the third member is the Irish judge. The decisions of the commission are final as regards questions of fact, and the orders issued by the commission must

be observed by the carriers, unless the orders are set aside by appeal to a superior court. It was further provided in the act of 1888 that every railroad company must submit to the Board of Trade, within six months after the passage of the act, a revised classification of its freight business and a revised schedule of maximum rates. The classifications and schedules thus submitted were to be scrutinized by the Board of Trade, and after having been put into form satisfactory to the board, were to be submitted to Parliament, accompanied by such observations as the board might think fit to make. If any railroad company failed to submit a classification and schedule of charges, the board was empowered to make such provisional classifications and fix such provisional rates as it deemed best, and submit them with its recommendations to Parliament. It was provided in the act that Parliament should, if it approved of the recommendations of the Board of Trade, enact the classifications and schedules into statutes binding upon the carriers until changed by subsequent legislation.

The law of 1888, now in force in Great Britain, seems to have worked satisfactorily. The relations of the carriers and the public are harmonious, and there are but few complaints either of exorbitant charges or unreasonable discriminations. The commission has had relatively little work to do. Possibly the law has worked so successfully because the railways of the country before the enactment of the law had been consolidated into a small number of systems, each system having the traffic of a fairly distinct part of the country without much rivalry from other companies. The law permits the railways to pool their traffic whenever they may think it necessary to do so. As a matter of fact, pooling has not been much resorted to, because the division of the field among the railroad systems has made pooling unnecessary.

The relations of the railways with each other have been made more harmonious, and the prevention of unreasonable discriminations has been made easier by the railway clearing-house. In 1842 the railways of Great Britain decided to establish a clearing-house for the collection of the charges on joint business and for the distribution of those receipts among the railroads concerned in through shipments. In 1850 Parliament incorporated the clearing-house, and since then it has been a very prominent feature of the British railway system.

Relation of the Railroads and the State in France

The French railway system has some unique features. The result of railway evolution in France has been the development of 7 large railway systems, of which 6 are controlled by private corporations. The other is owned and operated by the Government. Five of the private systems radiate from Paris, and one has its lines in the south. Each system possesses a monopoly of the railroad transportation service of a definite portion of the country.

The tendency of the French people to be systematic is well illustrated by their legislation regarding railroads. As soon as the significance of the railroad as a transportation agent was realized (as early as 1833), a general law was passed stipulating that concessions to railways should be made only by legislative enactment, that the charter period should not exceed ninety-nine years, that the state should reserve the option of managing the railroads, that the state should have the right of passing upon maximum charges, and that the state should become the owner of the railroads at the expiration of the charters. These principles have been maintained in all subsequent laws.

The policy of state construction and operation was carefully considered by two special commissions in 1837

and 1840, and the decision was reached that the lines should be built and run by companies subsidized and controlled by the Government. This policy was embodied in the detailed law of 1842, which provided for several roads radiating from Paris. The central and local governments furnished the lands, road-bed, and stations, the companies provided the superstructures and rolling-stock, the contributions of the Government averaging about $50,000 a mile. The state owned the road-bed and leased the lines to the companies. The charters of the companies were limited to forty years; the average length of the leases was thirty-six years.

Progress under this plan was satisfactory until the panic of 1848, when work on the new lines was temporarily stopped. The state decided to buy one road, that from Paris to Lyons. The rest of the mileage was divided among 27 companies. The second important phase of the railway history of France was inaugurated by Napoleon III. He became Emperor in 1851, and soon proceeded, as a measure of conciliation to the money interests, to group the railway companies into the present six large systems, each system having a monopoly within the section served by it. The railroads were not to revert to the state until ninety-nine years from the date of the change. As the time of the leases has not since been altered, they will expire from 1950 to 1960.

The companies, however, did not construct new lines so rapidly as was desired, and a financial crisis in 1857 brought all railroad building to a stop. In consequence, France entered upon a third phase of her railway experience in 1859 by guaranteeing the bonds which the companies might issue to secure funds to construct new lines. The state guaranteed 4 per cent interest on the bonds, and that enough should be contributed to a sinking-fund to make certain the amortization of the bonds. Indeed, this

guarantee of the interest on the bonds comprehended more than the obligations incurred in constructing new lines. There were certain existing roads whose operation was not profitable, and they were classified with the new lines and their obligations were given the same guarantee of interest as was given the bonds of new lines. There was no change made in the provision of the charters that the roads should revert to the state at the end of ninety-nine years; but the state added a proviso giving it the right to buy any road after fifteen years.

The six companies built a large number of new lines, and the state's obligations were made heavy; but demands for local lines were not all met. So in 1865 the state decided to authorize the construction of local roads by companies aided by the local communities and by the Central Government, which granted these companies the same interest guarantees that had been granted to the large companies for new lines in 1859. The state attempted, however, to preserve to the six large companies the monopoly powers they possessed, by providing that the local roads should be branches and feeders of the existing lines, and not be so built as to be capable of being developed into through lines that might compete with the large systems. The local lines, however, were built with the standard gage, and a railway speculator named Phillippart tried to weld the local roads into competing lines. He was defeated in his attempt in 1876; but his failure threw the local roads into bankruptcy and led the state to enter upon the fifth phase of its railway policy—the purchase and operation of railways by the Government.

The local roads were principally in the north and in the southwest. Those in the north were absorbed by the Northern Railroad; but an agitation for state railroads prevented the purchase of the local roads in the southwest by a private corporation. In 1877 the state

decided to buy these southern local lines, and two years later, under the leadership of Freycinet, Gambetta, and others, who were doubtless influenced by what was transpiring in Germany, the French ministry decided to begin the construction of a large system of state railways. The legislature, however, gave the ministry only moderate financial support in the execution of its plans. The state roads did not prove a success. The new lines built by the state were located with reference to political as well as business claims, and were local disconnected lines that could not be operated profitably as independent roads. The state leased them for short terms to the six private companies. The local roads which the state had bought in the southwest were united into a Government system, but as it had no Paris connection it could not exercise much power in comparison with the six large private companies.

In 1883 France adopted the railway policy to which she has since adhered. The construction of roads by the state was abandoned. The state retained its system of roads in the southwest, but gave those which it owned in other parts of the country to one or another of the six companies, receiving from some companies certain lines which might have competed with the state roads in the southwest. The new lines to be constructed in the future were to be built by the companies with capital advanced by them. The money thus advanced is being repaid by the state in annual instalments. By the time the charters expire the annual payments of the state will equal the capital advanced by the companies, together with interest on the advances.

France in 1883 returned to the plan of granting a complete monopoly of transportation to subsidized private companies, and increased the subsidies to the companies by guaranteeing to their stockholders minimum annual

dividends equal to those which they had been receiving for the past few years. The companies are required to turn over to the state two-thirds of such dividends as they may earn in excess of certain stipulated percentages, but the limit is put so high that the state will hardly receive any considerable share.

France affords an example of a country that has adhered pretty closely to a policy of granting monopoly privileges to private railways. The results are not altogether satisfactory. The state has been able to maintain a strict regulation of railway management; discriminations have been prevented, the waste due to competition has been avoided, and the state has the prospect of coming into the possession of the railroads in the future. But the railway companies have made good use of their opportunities to force the public to aid them. In 1842 they received construction subsidies, in 1852 an extension of their charters from forty years to ninety-nine years from the date of change. In 1857 the state guaranteed the interest and repayment of a large portion of their bonds, and in 1883 the state assured to all investors liberal dividends on their advances. The public has certainly given liberal aid to the railroads, but it has not enjoyed especially low rates; indeed, railway charges in France as contrasted with those in other countries have been relatively high.

REFERENCES FOR FURTHER READING

HADLEY, A. T. Railroad Transportation, chs. viii, ix, and x.

HENDRICK, F. Railway Control by Commissions, 1900, chs. ii and vii.

ACWORTH, W. M. The Railways of England, London, fifth ed., 1899.

MEYER, B. H. Report of Industrial Commission, vol. ix, pp. 946–949, and 955–957.

FINDLAY, G. The Working and Management of an English Railway.

STERNE, SIMON. Railway Systems in Europe, Sen. Misc. Doc. No. 66, vol. ii, 1886–'87.

CHAPTER XXIV

RELATIONS OF THE RAILWAYS AND THE STATE IN ITALY AND GERMANY

In contrast with the policy of the private ownership of railroads exemplified by the United Kingdom and France is the plan of government ownership typified in different ways by the railway history of Italy and Germany. Government ownership prevails in many countries both in Europe and in the other parts of the world that are under the control of European nations. During the past twenty-five years there has been a rather marked tendency outside of America and the United Kingdom to substitute state control for private management.

In some instances the transition from private to state control has included a short period during which a part of the lines taken over by the Government were leased to the state by their private owners. In Prussia, Austria, and Hungary, for instance, the Government built some lines, purchased others, and leased still others of their owners until the Government could more readily purchase the lines thus leased. This change, by means of a lease, from private control to complete nationalization applied to only a few lines in Prussia, and was made in a few years; but in Austria and Hungary more use was made of the plan of leasing, and the purchase of the private lines proceeded more slowly. Switzerland has passed directly from private to Government ownership without leasing the lines.

Some countries have built or purchased railway systems and then entrusted the operation of the roads to leasing corporations. Holland, for example, constructed both of the two railroad systems in the country, but the Government operates only one of the systems, the other one being leased to a corporation. In India the Government has leased several lines to companies, and some other countries have taken similar action. The plan of Government ownership and private management was experimented with more fully by Italy than by any other country.

The history of the relation of the railway to the Government in Italy is peculiarly interesting. The principal roads were started while Italy was still split up into a number of petty states. These states gave charters to private companies to construct lines, and assisted them with advances of capital, interest guarantees, and subsidies for building lines and for running trains. Each state had its own little isolated railway system.

The political unification of the country was followed by railway consolidation, and the roads were united into four systems. Though advantageous to the railway companies, consolidation did not make them prosperous, and the Italian Government found itself heavily burdened by the financial aid it had undertaken to give the railroads. In the later seventies Italy decided to purchase the roads and to construct much new mileage. The motive was partly the political one of desiring to take the railroads of upper Italy out of the hands of an Austrian company.

The ministers who had inaugurated the policy of state purchase were in favor of the state operating its roads, but they were displaced by men who favored a lease of the lines to private companies. In 1878 the Italian Parliament appointed a commission to investigate the entire question of state and private management of railroads.

The commission made an exhaustive study of the subject and submitted a comprehensive report in 1881, in which it opposed the operation of railways by the state. The conclusions of the commission were that state operation and management would be more expensive than private, and that it would be accompanied by grave political dangers.

In 1885 Italy leased the railroads on the mainland to two companies, the Adriatic and the Mediterranean, of nearly equal strength, each having a trunk line extending the long way of the country. The Sicilian roads were leased to another company. The contracts were for a period of sixty years, each party having the right to terminate the contract at the end of twenty or forty years by giving two years' notice. The rolling-stock was sold to the companies, and the lines and structures leased to them. The railway history of Italy covers nearly every phase of the relation of the railways to the states, but though instructive, is less so than it would have been had Italy been a politically united and industrially strong country during the past sixty years. [See note, page 348.]

The plan of government ownership of railroads and their lease to private companies has an analogy in the municipal ownership and corporate management of street-railways. Several foreign cities own the street-car lines, and lease them to corporations which conduct the service under the regulation of the city government. The plan has some advantages, and its adoption by American cities has been strongly, though as yet unsuccessfully, urged by influential advocates.

Relation of the Railways and the State in Prussia

Though there are several countries in which the railroads are owned by the state, Germany furnishes the most prominent and successful illustration of state owner-

ship and operation. Each state composing the empire now owns most of the railroads within its borders. The Imperial Government is also a railroad owner, having acquired the lines in Alsace-Lorraine when that section was taken over from France in 1871. However, these lines owned by the empire are leased to Prussia and operated as a part of the system belonging to that state.

As compared with England, the industrial condition of Germany at the time of the beginning of railway history was very backward. Germany had hardly begun her industrial advance; indeed, the great development of her industries and her natural resources did not much antedate 1870. These facts go far to explain the difference between the railway policy of the United Kingdom and that of Germany. Had the industries of Germany been as fully developed as those of England in 1830, and had the political unification of the country been accomplished before that time, it can not be doubted that the demands for railroad transportation would have been so much greater than they were that private capital would have undertaken, without the support of the state, the work of supplying the country with a railway net. The state, moreover, would not have had the military reasons which she had urging her to engage in the construction of railroads and the purchase of those built by private capital.

Prior to the establishment of the German Empire in 1871, German railway legislation was that of the several states only; but since 1871 the empire has shared with the states in legislation for the control and development of railways. Prussia being the largest and most typical German state, her railway policy exemplifies that of the smaller states. In general, the policy of Prussia was to aid private capitalists in the construction of roads, and to subject the roads thus constructed and operated by cor-

porations to a detailed regulation. This has finally culminated in a nearly complete nationalization of the railway system.

The first general law regulating railway affairs was passed by Prussia in 1838. This initial law was detailed and comprehensive, and provided for a thorough control of the railroads by the state. The law has been added to by much subsequent legislation, but has never been supplanted. It contained the essential principles of the present system of governmental control of private railroads. Among the minor provisions of the law was one stipulating that the companies building railroads in Prussia were to be protected for thirty years against the construction of competing lines. This guarantee of protection against competition did not, however, prove a sufficient inducement to private capital, and in 1842 a law was passed providing for state aid in the form of interest guarantees, the state assuring to those investing capital in railways a minimum interest on their investments. In guaranteeing the interest return on invested capital, the Government reserved the right of taking the roads under its own management, should the private companies prove to be unable so to manage their lines as to secure net earnings large enough to pay the minimum interest guaranteed by the state. Several of the companies were unable to earn enough to meet these interest payments, and their lines were taken over and managed by the Government. The history of railway legislation in other countries as well as in Prussia shows that state subsidies and interest guarantees have had not a little to do in bringing about the nationalization of railroads.

The German Government is founded upon a military basis. The efforts of Bismarck and the other statesmen who wrought so successfully for the unification of Germany were directed toward strengthening the military power of

the German states, and of Prussia in particular. These statesmen saw that the railway system of Prussia and the other German states might be made to assist greatly in furthering the military aims they had in view. Consequently in 1848 Prussia began the construction of a railroad from Berlin toward the Russian frontier. The primary purpose was military, and the same purpose controlled the railway policy of Prussia for more than twenty years. From 1848 to 1862 Prussia added slowly to the state railway net, making such appropriations therefor as her limited resources would permit. The stocks of private railroad companies were also purchased by the state from time to time. From 1862 to 1870 Bismarck gave less attention than he had given during the preceding decade to the development of the state railway system. His every energy was devoted to preparing Prussia for the great struggle with Austria and with France which he foresaw must precede the unification of the empire. There was no pronounced change in Bismarck's railway policy during this decade; the lines controlled by the state were operated with a view to securing a maximum amount of business. The state managed its roads in much the same way as the companies did theirs. The roads having been acquired for military purposes were operated with a view to securing as favorable fiscal results as possible.

After the Franco-Prussian War Bismarck tried to bring about the purchase by the empire of all the railroads, those belonging to the several German states and those owned by companies. Bismarck desired to strengthen the newly founded empire, and, by making it relatively much stronger than any of the component state governments, insure the permanency of German unity. This, however, was not the reason advanced. The military advantage of the ownership of the railroads by the empire, the elimination of railway discriminations by means of state

ownership, and the ability of the state to use the railroads for the promotion of industrial and social welfare, were the arguments upon which chief stress was laid. Bismarck's scheme for the purchase of the railways by the empire was not adopted, because of the jealousies of the smaller states, but in 1878 he induced Prussia to proceed with the acquisition of the private railroads within its limits, and thus practically to complete the work of nationalizing German railways.

The ownership of the railroads by the Government in Germany and other states has come about in various ways. When Prussia decided to nationalize the railways of the country, the Government did not at once take possession of all the lines, but purchased one system after another as satisfactory arrangements could be made with the corporations. When the policy of state purchase was inaugurated, the Government owned more miles of road than any single corporation within the state. In April, 1880, the state possessed 3,760 miles of road. During the next few years the state purchases were made with considerable rapidity, so that in April, 1886, the Government was managing 13,000 miles of lines. The present mileage owned and operated by Prussia is about 20,000. The Government has experienced but little difficulty in securing possession of the private lines. It has not been necessary in any case to resort to expropriation. By offering the companies a liberal sum for their properties and by exchanging Government bonds for the securities of the companies, the state has been able to purchase the lines without serious opposition on the part of their former owners.

It should be noted that there are still some railroads in Prussia owned and operated by private companies. In 1905 there were about 265 miles of main line and about 1,212 miles of auxiliary lines in the hands of the

private companies. These private roads consist of relatively unimportant lines, and are operated by their private owners in accordance with detailed regulations laid down by the state. They are in no sense competitors with the state system, and they will probably soon be acquired by the Government.

The results of the nationalization of the railroads in Prussia have been highly satisfactory. This is particularly true of the financial results. According to a law passed in 1882, the first charge on the net profits of the state railways is the payment of the interest on the debt incurred in the purchase of the roads. The railway management is also required to pay off at least three-fourths of one per cent of the total debt each year, provided, of course, the net profits are large enough to enable such payments to be made. If these interest and amortization payments do not take all the net profits, the surplus may be used in purchasing railways or may be turned into the general budget of the state.

The state has succeeded in operating the railroads economically and with surprisingly large net profits. During the first ten years following the passage of the act of 1882 the average net profits equaled $5\frac{1}{3}$ per cent per annum on the capitalization. During the 5 years ending in 1900 net profits were 7.16 per cent; in 1904–5, 7.17. These large net earnings have enabled the state to pay the interest charge of $3\frac{1}{2}$ per cent on the debt, to pay off over $\frac{3}{4}$ per cent annually of the debt, and to turn over a large amount annually to the general budget. During the eighteen years ending with and including 1899 the total net profits amounted to nearly $1,500,000,000. Of this sum about $770,000,000 were required to meet the interest charges. The debt had been reduced $220,000,000, and nearly $350,000,000 had been turned over to the Government to meet the ordinary expenses of other de-

partments. Over $15,000,000 had been devoted to extraordinary expenses for general improvements and for rolling-stock, and large sums taken from earnings for building new lines. The surplus in 1905 was $151,000,000.

As was stated in Chapter XXI, railway charges in Prussia are low for the passenger traffic and high for the freight service as compared with the United States, the average earnings per passenger per mile being now but a little over one cent—barely one-half the average earnings per passenger per mile secured by the railroads of the United States. This low passenger earning is the result of the low fares in the third and fourth classes, the ones used by nine-tenths of the people of the country. The ordinary fare—fourth-class—is about four-fifths of a cent a mile; for third-class, a little over a cent and a half a mile. The fares for the second and first classes are relatively high, but as comparatively few people travel by those classes, the high charges in those classes do not greatly affect the average passenger mile earnings of the roads. Average freight rates in Prussia are higher than in the United States, the average earnings per ton per mile in Prussia being about 1.20 cents—one and a half the ton mile earnings for the railroads of the United States as a whole. In making these comparisons it should be borne in mind that the charges must necessarily be considered in connection with the conditions under which the services are performed. Prussia is a country with a small area and a large population, where passenger travel is highly developed and where low fares may be profitable. On the other hand, the freight business of Prussia is very small as compared with the freight transportation carried on by the American railways. We move great masses of commodities long distances, and can do so at a very low rate per ton per mile.

It is difficult to decide what effects state management

has had upon the character of the service performed by the railroads of Prussia. Most impartial critics consider the passenger service to be satisfactory, and believe it to be well adapted to the needs of the country. The freight service, on the other hand, is usually considered to be inadequately developed. The technical development of the freight service in the United States is far in advance of that of Germany. The reasons for this are partly economic, but they must also be in part administrative. Under the stress of competition among rival lines in this country, and under the incentive which private management has to reduce expenses to the lowest point, the freight carriers in the United States have built up a system of freight transportation that is better and more economical than can be found in any other country. Whether the more conservative administration of the railways by state officials in time will or can bring the German freight service to the high degree of technical development attained in the United States is doubtful; but technical progress is being made year by year by the German states, with the result that the cost of the freight service and the rates have been much reduced within a comparatively few years.

The success which the Prussian Government has had in the management of its railroads has largely influenced other European countries, notably Belgium, Austria-Hungary, and Switzerland. Until a few years ago the Belgian state operated a part of the railway net of the country, the remainder being in the hands of corporations. At the present time the railway system is fully nationalized. Austria and Hungary have continued to increase the mileage of the lines owned by the Government until in each country the state has secured possession of most of the important roads. A complete nationalization of the railway systems of those countries is a mat-

ter of a comparatively short time. Switzerland is the last European country that has changed from private to national roads. In 1898 the people authorized the Federal Government to purchase all the roads in Switzerland, the right to do so having been reserved by the state when it granted the charters to the companies. The plan of nationalization provided that three of the railway systems of the country should be taken over by the Federal Government in 1903, and that the fourth system, the St. Gothard, should be acquired in 1909. Switzerland has nationalized her railroads by purchasing them in accordance with provisions contained in the railway charters.

Thirty years ago many persons were advocates of a system of dual ownership of railroads, the state owning and operating a few systems, and private companies the other lines. It was thought that the competition of state with private lines would compel the latter to charge such rates and adopt such regulations and practises as the state chose to institute, and that the abuses which had arisen under unregulated private management would be avoided. Belgium and other countries tried the plan of dual ownership, but the results were not satisfactory. It was discovered that the transportation abuses were mainly the result of competition, and that the rivalry of state and private roads led to discriminations and other objectionable practises. The chief advantages to be derived from state ownership of railroads can be secured only when the state possesses a monopoly of railway transportation and is able so to manage the railroads as to promote industrial progress and social changes. In all countries where dual ownership has been tried the state has either proceeded with the nationalization of the railways of the country or has surrendered her own lines to the management of corporations.

This survey of the relation of the railways to the state in our own and foreign countries shows that the governmental control of railways has assumed a variety of forms. The causes for this variation are social, political, and economic.

In some countries the individual expects the state to exercise many functions which the citizens of other countries do not desire their government to perform. The Government of England presents a striking contrast to those of France and Germany in this regard. The English political ideal has been to minimize the industrial functions of the Government; whereas, the Continental ideal has rather been to develop a bureaucratic state capable of exercising as many functions as possible. The continental governments have unhesitatingly assumed a degree of railway aid and control that the English and American Governments would not have been expected nor allowed to undertake.

In each country, furthermore, the railway history has been influenced by the political history. Witness Italy, Germany, France, and the United States. In Italy and Germany, national unity not having been achieved until long after the railway construction began, the early lines were chartered by petty rival states, and the coordination and consolidation of the railways in those states had hardly begun when the English railroads had been amalgamated into large systems. The unstable political conditions of Germany and Italy made it necessary for the states to give greater aid to railroads than would otherwise have been necessary. Among the political events in France which have affected the relations of the railways and the Government may be mentioned the overthrow of the republic by Napoleon III and the Franco-Prussian War. The fact that the United States is a federal state composed of a large number of States

which have the power to charter and regulate railways has colored the history of railway policy in America.

The railway policy of every government has been influenced by its financial condition. The Continental states which adopted the policy of state railways at the beginning were Belgium and other small states with good credit. The larger countries did not venture to assume the financial burdens of owning and operating railroads on a large scale until many years later. The strong agitation for the complete nationalization of railways in Prussia, Austria, Italy, and other Continental countries came in the seventies. Prussia and Italy bought theirs then. Several European countries have during recent years been proceeding in the direction of state ownership as rapidly as their financial condition will permit.

The variations in the railway policies of different countries are in part due to economic causes which are quite independent of the political or financial conditions just referred to. In Egypt, India, South Africa, New Zealand, the Australian colonies, and other states which the English have recently occupied for industrial and commercial reasons, the railways have been built and operated by the governments of these dependencies for the sake of developing the economic resources of the countries as rapidly as possible. These colonial governments have an industrial character which well consists with the ownership and management of railways.

Each country has a railway history of its own, which has been determined by the social, political, and economic conditions peculiar to it. This being so, there can manifestly be no one policy of governmental control of railways that it could be advantageous for all countries to adopt. The relation of the railways to the state is a problem which each country must solve for itself. The adjustment to be made depends upon the

conditions which are peculiar to its own national, social, and industrial evolution.

REFERENCES FOR FURTHER READING

HADLEY, A. T. Railroad Transportation, chs. xi–xiii.

HENDRICK, F. Railway Control by Commissions, chs. iii and vi.

STERNE, S. Railway Systems in Europe. Sen. Misc. Doc. No. 66, vol. ii, 1886–1887.

MEYER, B. H. Report of Industrial Commission, vol. ix, pp. 962–983.

Administration of Prussian Railroads, Annals American Academy of Political and Social Science, vol. x, pp. 389–423, 1897.

COHN, G. Results of State Railway Administration in Prussia, Journal of Political Economy, vol. i, pp. 172–192.

BRADFORD, E. S. Prussian Railway Administration, Annals, American Academy, vol. xxix, March, 1907.

NOTE.—The contracts between the Italian Government and the railway companies date from July 1, 1885, and are terminable after twenty years upon two years' notice. On the 28th of April, 1903, both parties gave notice of the abrogation of the contracts July 1, 1905. According to Professor B. H. Meyer, "Dissatisfaction with present conditions is universal. Passengers complain of vexatious delays and general irregularity. Shippers chafe under rates alleged to exceed those of surrounding countries by 25 to 30 per cent, not to mention lack of cars and intolerable slowness in speed. Railway employees are discontented because the companies have failed to live up to the terms of their contracts with respect to hours, wages, and holidays. Lastly, the Government is dissatisfied because, contrary to the anticipations of 1885, the State has not only received no financial benefits, but it has been compelled to make up deficits which, since 1895, have exceeded $40,000,000 annually."—*Annals of the American Academy of Political and Social Science*, vol. xxiii, p. 139.

CHAPTER XXV

REGULATION OF RAILWAYS BY THE AMERICAN STATE GOVERNMENTS—THE STATE COMMISSIONS

In the United States as in the United Kingdom the Government has sought to supervise or regulate rather than to monopolize the business of rail transportation. By our Constitution the power "to regulate commerce with foreign nations, and among the several States and with the Indian tribes" is vested in Congress, while each State has authority over the commerce that does not pass its boundaries. The regulation of international and interstate commerce is vested in Congress; the control of *intra*state commerce is exercised by the several States and Territories. There are 49 governments in the United States possessing authority over railroads. The problem of railway regulation is unavoidably a large and complicated one in a country so extensive as ours, and the division of political authority resulting from our federal plan of government has made the problem a more complex one than it would be were there only one controlling authority, as is the case in the United Kingdom, France, Austria, and most other European countries.

The States preceded the Federal Government with legislation for the regulation of railways. The State alone could charter a corporation to construct and operate a railroad within its borders, and, as the corporation derived its powers from its charter, the States were in a position to exercise such control over the railroads as

they chose to exert. The control which was actually exercised was slight—much less thorough in many particulars than the public welfare demanded. The tendency in this country has been to minimize Government interference with railways as much as we have thought it possible to do without jeopardizing public interests, but the minimum of interference which we have considered safe has not always been the same. During the period from 1840 to 1870 many States gave aid to railroad construction, and from 1850 to 1870 the National Government assisted the Western lines. The States also showed some tendency to regulate the railway companies, but Government interference was rather for supervision than for regulation. From 1850 to 1870 there was but little effort made, outside of New England, even to supervise the railway business. This was the period of the dominance of the *laissez faire* or let-alone doctrine of government. Our experience during this period, however, taught us that we had placed too much confidence in the efficiency of unrestrained interrailway competition as a regulator of railway business; consequently during the past forty years most States as well as Congress have endeavored to control the relations of the railroads to each other and to the public, and the present tendency in the States is toward an increasingly stringent regulation.

In the beginning an effort was made to subject the railroads to the kind of regulation that had been exercised over the turnpike roads and canals. It was supposed that the railway was only an improved road, and that shippers and travelers would use their own vehicles for more or less of the traffic. The early railway charters, being modeled after the canal and turnpike charters that had preceded them, not only contained provisions regarding the organization of the corporation and the exer-

cise of the State's power of eminent domain to secure a right of way, but also included sections regarding the erection of toll-gates and the regulation of the tolls or charges which might be made. In many cases the charters fixed the maximum charges, and in other instances—especially in the New England States—the railway companies were permitted to fix their own charges, subject to periodical revision by the States in case the net earnings should exceed a stated per cent of the capital.

Charter and statute provisions regarding toll-gates on railroads soon disappeared; but the policy of fixing maximum rates and fares for traffic by railroad was continued to some extent. However, the charter stipulations and other early legislative enactments fixing maximum rates or maximum profits exerted very little influence upon the actual charges of the railways, because the limits set were placed so high. The maximum rates fixed by the charters were considerably higher than the railroads actually charged. Furthermore, it was, and has always been, easy for a company to keep its net earnings from exceeding a fixed per cent of its capital as long as it has the power of increasing its capitalization by the issue of new stock.

Although the charter limitations on charges and profits proved ineffective, there was no disposition on the part of the State governments before 1870 to pass laws fixing rates and fares. The public thought it might safely depend on interline competition for protection against exorbitant charges. Indeed, the railroads proved to be of such great assistance to the development of the country that the chief concern of the public, particularly in the Western States, was to secure as many lines as possible. There was little disposition to impose restrictions on a company proposing to build a new road. In many States general laws were passed under which railroad

companies might be chartered without securing a special act of the Legislature. The public did not think it necessary for the Government to regulate the location, capitalization, construction, and operation of the roads. Competition and "the laws of trade" it was thought would attend to those matters. In this regard we acted differently from most European countries.

The agency now employed by forty of the States for the supervision or regulation of railways is a commission. The first railroad commissions were created in New England, where they were appointed for two purposes: (1) to appraise the value of the land which the railroad companies might need to take from private persons with whom satisfactory terms of purchase could not be made; (2) to apportion the receipts and expenditures of an interstate road among the States in which the road conducted its business. The States considered this apportionment necessary, because they had placed in the railway charters limitations on the charges and profits of the companies. The commissions established for these two purposes were given other duties of a supervisory character. To quote the Rhode Island law of 1839, they were to examine and report on "the state, condition, and proceedings of the several railroad companies, so far as the public interest may require the same." The commissioners were to inform the Legislature regarding the financial affairs of the companies, and, as the New Hampshire law of 1844 provided, to report whether the companies were observing the provisions of their charters and of the laws of the State. Probably the strongest motive of the States in the early supervision of railroads was the desire to lessen the number of accidents. For this reason mainly a commission was established by Connecticut in 1853, by Vermont in 1855, and by Maine in 1858.

The attempts of the States to supervise railways, whether by commissions or by other executive officers of the Government, suggested the need of systematic statistics regarding the financial and traffic operations of the companies. In several States—e. g., Ohio, New York, and New Jersey—the officers appointed to collect these statistics were forerunners of the railway commissions. They performed one of the most important services for which commissions are created.

Prior to the civil war several States had begun in a small way to supervise railroad transportation, and in each of the New England States, except Massachusetts, a commission assisted in this work. Briefly stated, the functions exercised by the early commissions were the appraisement of the value of private property taken by the railroads, the apportionment of the receipts and expenditures of interstate roads among the States concerned, the inspection of roads and the enforcement of laws to prevent accidents, the investigation of the affairs of railway corporations to determine whether the companies were violating their charters or the State laws, or whether the corporations were giving the citizens or corporations of other States greater advantages than they were giving those of the State which had incorporated the companies, and to collect statistical data concerning the financial affairs and business operations of the railroad corporations. With the exception of the appraisal of the value of private property taken for railway uses, all these functions are now exercised by the existing State commissions. Numerous other duties have been assigned to those bodies as the States have attempted to deal with new phases of the problem of railway regulation.

Shortly before 1870 there arose a public demand for a more effective regulation of railway transportation. The main cause of the demand was the growing preva-

lence of gross discriminations in rates and fares. Unrestrained competition led to such abuses that the people, both of the Eastern and Western States, passed more stringent laws to regulate the relations of the railways with each other and with the public. In the Eastern States, where the principal railway lines now in that section had already been constructed, and where the industries had been diversified and developed to a considerable degree, the laws enacted were more conservative than were the laws passed by the Western and Southern States. The Eastern States in dealing with "the railway problem" depended on publicity and the force of public opinion to correct the abuses; they authorized their governments to *supervise* the railways first of all, and to regulate by force only when absolutely necessary. In the West and South, however, the feeling against the railroads was much more intense; the people did not believe publicity and public opinion would bring about satisfactory relations between the carriers and the public; they preferred rather to depend on publicity and *penalties*. The Eastern States established commissions, with power to investigate railway practises and to report the facts to the Legislature and the people, and to suggest what laws should be passed. The Western and Southern States established commissions with power to issue orders and to enforce the orders by legal procedure. The Eastern commissions could supervise and advise, the others could supervise and regulate; one had advisory powers, the other mandatory authority.

The Massachusetts commission, established in 1869, may be taken as a type of the supervisory-advisory class. The commission consists of three men appointed by the Governor with the consent of the Council. The term of office is three years, one person being appointed each year. The board has power:

1. To examine railway corporations and determine whether they are fulfilling the terms of their charters and are obeying the laws.

2. To supervise the railroads "with reference to the security and accommodation of the public."

3. To investigate complaints against the railroads. It has the power to summon witnesses and examine them under oath. It may also institute investigations on its own motion.

4. To prescribe a uniform system of keeping railway accounts, and to inspect the books and accounts of railway corporations.

5. To act as a board of arbitration for the settlement of disputes between railroad corporations and the public.

6. To make an annual report to the Legislature discussing "the actual working of the system of railroad transportation in its bearing upon the business and prosperity of the commonwealth," and suggesting such legislation as may seem appropriate.

From this list of the chief powers possessed by the Massachusetts commission it will be seen that the enforcement of the decisions of the commission is left to public opinion. In the case of Massachusetts the commission has enjoyed the confidence of the public, and has been very successful in regulating the railways. When legislation has been needed, the recommendations of the commission have usually been accepted.

The problem of railway regulation in the West differed very much from the problem in the Eastern States. In the West the construction of railroads began later, and the public was concerned mainly with securing the needed lines. The public aid, State and local, though large in the East, was much greater in the West. There was little thought given to railway regulation in the West until after the civil war; indeed, such was the confidence

in the efficiency of competition to regulate the business of railway transportation that the necessity for State regulation was not realized.

Public opinion in the Western States underwent a very sudden and complete change during the five years succeeding 1867. The fierce competition of recently formed through lines connecting Western cities with Chicago, and of the trunk lines joining Chicago with the Atlantic seaboard, led to personal discrimination and to a great reduction in through competitive rates. Rates at local non-competitive points being left unchanged or changed but slightly, the result was excessive discriminations between places. The farmers and people of the smaller towns, who had aided the railway corporations liberally in constructing the roads, were paying high rates, while the shippers in the large cities were favored with low rates. At the same time Eastern capitalists were constructing new lines of railroads in the West with great rapidity. These railroad corporations, composed largely of non-resident men, seemed to be prospering greatly. Prices meanwhile were falling from the high level which they had been given by the inflation of the currency during the war. Falling prices for agricultural products, due to the contraction of the currency and to the great increase in the area devoted to farming, were bringing down the farmer's profits and making him discontented.

The farmers and townsmen of the Western States saw no reason why the companies should not give local points as low rates as had been accorded to the large cities. They did not suppose the railroads were doing the competitive business merely for pleasure, nor that the roads were carrying any traffic at a loss. The railroads must be making money on their competitive business, and ought to lower their local rates to the level of

competitive charges. This reasoning was not altogether sound, and the people of the West did not fully understand the railway problem; but they knew that the railroads were unjustly discriminating, and they were convinced that local rates were disproportionately high. They believed also that the railroad corporations were public carriers, performing a service of a public nature, the charges for which could be regulated by public authority. The companies, however, at first ignored the public, and then defied them. The public accepted the gage of battle, the railroad companies were defeated, and the so-called "granger laws" and "granger decisions" were the result.

The laws which the Western States enacted between 1870 and 1880 for the regulation of railways, including the laws establishing State railroad commissions, are commonly called granger legislation, because of the support which the granger societies gave to the struggle to secure the legislation. The name is not altogether accurate, because the agitation for State control of railways in the West became strong before the Patrons of Husbandry or the grangers had been fully organized. In the beginning the agitation for State control was due to a farmers' movement to which the people of the towns gave their support. Later—that is, from 1872 on—the granger societies actively aided the movement, and became its strongest supporter. Hence the name granger legislation.

The State regulation of railroads in the West was first undertaken by Illinois, and the Illinois commission may be taken as a type of the commission with power, the supervisory-mandatory commission. In 1870 the people of Illinois revised their Constitution, and included in the new document a clause enjoining upon the Legislature the enactment of laws for the regulation of rail-

ways. To carry out this provision of the Constitution, a law was approved April 7, 1871, prescribing maximum rates and fares, and prohibiting discriminations. Another act, approved a few days later, established a railroad and warehouse commission to supervise the railways and to assist in enforcing the laws for their regulation. The law approved April 7, 1871, was displaced in 1873 by a law making it the duty of the commission to prescribe "a schedule of reasonable maximum rates of charges for the transportation of passengers and freight."

The Illinois commission, like the one for Massachusetts, has power to investigate the railroads as to their physical condition and management, and to prescribe the form of reports to be made by the companies. In addition to possessing most of the powers held by the Massachusetts commission, the Illinois board can prescribe schedules of maximum charges, and can prosecute the railway companies either to compel them to obey the commission's decisions or to force them to obey the laws regulating railway transportation. Furthermore, if an Illinois company charges a rate higher than that which the commission has declared reasonable, the company is compelled to prove that the rate which it has charged is reasonable. The State is right until proved wrong; the burden of proof is thrown upon the carrier. This was an important modification of the common law, which compelled the State to prove its case when it questioned the reasonableness of a rate charged by a common carrier.

Other States in the West and South passed laws similar to the Illinois statutes just described. In 1874 Iowa and Wisconsin passed laws prescribing maximum railway charges. The same year Minnesota established a commission endowed with power to fix rate schedules. In 1879 Georgia instituted a commission with power to prescribe rates. In 1879 California did what no other State

had done by adopting a Constitution in which the State Legislature was required to establish a railroad commission with power to fix "rates of charges for the transportation of passengers and freight by railroad or other transportation companies." Such a commission was established the following year. Since then several other States have established mandatory commissions. The map on page 360 shows what States have commissions now, and indicates the type of each commission.

The enforcement of the "granger laws" was vigorously opposed by the railroad companies, who maintained that their business was a private one, and that the State had no power to fix the rates which they should charge for their services. The railroads claimed, moreover, that the States which had granted a charter to a company giving it power to make reasonable charges for its services could not prescribe the rates to be charged by the company without the violation of a contract. It had been decided by the United States Supreme Court in 1819, in the famous Dartmouth College case, that in granting a charter a State entered into a contract relation. The courts, however, did not uphold the contention of the railway companies, and in 1877 the Supreme Court of the United States, in the noted granger cases, declared valid the State legislation fixing railway charges. The railway corporations were compelled to recognize the public nature of the service they were performing, and to acknowledge the authority of the States to regulate the railway business, even to fixing the charges for the same.

The Supreme Court gave the States, in 1877, greater authority over railroads than they now possess. The granger laws fixed rates on all the traffic by rail within the State. Though commodities might be shipped beyond the State or enter the State from outside, and thus become interstate commerce, the railroads must

MAP SHOWING
STATE
RAILWAY COMMISSIONS
Advisory Powers.
Over Railroads.
Over Corporations.
Over Public Utilities.
Mandatory Powers.
SCALE OF MILES
0 100 200 300
100° Longitude West 92° from Greenwich
DOMINION OF CANADA
PACIFIC OCEAN
ATLANTIC OCEAN
GULF OF MEXICO
MEXICO
WASHINGTON
OREGON
CALIFORNIA
NEVADA
IDAHO
MONTANA
WYOMING
UTAH
ARIZONA
COLORADO
NEW MEXICO
NORTH DAKOTA
SOUTH DAKOTA
NEBRASKA
KANSAS
OKLAHOMA
TEXAS
MINNESOTA
IOWA
MISSOURI
ARKANSAS
LOUISIANA
WISCONSIN
ILLINOIS
MICHIGAN
INDIANA
OHIO
KENTUCKY
TENNESSEE
MISSISSIPPI
ALABAMA
GEORGIA
FLORIDA
SOUTH CAROLINA
NORTH CAROLINA
VIRGINIA
WEST VIRGINIA
PENNSYLVANIA
NEW YORK
MAINE
MASS.
VT.
N.H.
DEL.
MD.
Seattle
Portland
Columbia
San Francisco
Los Angeles
Salt Lake City
Denver
Kansas City
Omaha
Minneapolis
St. Paul
Milwaukee
Chicago
Detroit
Cleveland
Pittsburg
Cincinnati
Louisville
Memphis
St. Louis
New Orleans
Savannah
Charleston
Washington
Philadelphia
Baltimore
New York
Boston
Buffalo
Ontario
L. Superior
L. Michigan
L. Huron
L. Erie
L. Ontario
St. Lawrence R.
Missouri R.
Colorado R.
Arkansas R.
Mississippi R.
Rio Grande
BAHAMA ISLANDS
124°
116°
108°
100°
92°
84°
76°
68°
42°
34°
26°
STERLING ENG. CO.

carry the goods while within the State at such rates as the State had fixed. Although the Constitution of the United States vests in Congress the power to regulate commerce among the States, the Supreme Court held in the case of Peik *vs.* Chicago and Northwestern Railway Company that "until Congress acts in reference to the relations of this company to interstate commerce, it is certainly within the power of Wisconsin to regulate its fares, etc., so far as they are of domestic concern." The language of the court apparently gave the States power to regulate not only intrastate but also interstate traffic until Congress should decide to exercise the power over interstate commerce conferred upon it by the Constitution. The States so interpreted their powers until 1886, when the court in the case of the Wabash, St. Louis and Pacific Railway Company *vs.* Illinois reviewed its language and decided that the States had no right to regulate interstate commerce, but must confine themselves to intrastate traffic. This Wabash decision greatly limited the authority of the States over railroads, and was one of the influences that led Congress to pass the existing Interstate Commerce Act.

The early granger laws were the first efforts of a thoroughly aroused public to apply vigorous remedies to a severe social malady, and it is possible that the States attempted to proceed too rapidly. Minnesota repealed her law of 1874 the year after its passage, and put in its place a law providing for only one commissioner with little more than supervisory powers. This law remained in force for ten years, when a stronger statute was again enacted. In 1878 Iowa repealed her law of 1874, by which a schedule of rates had been fixed, and established a commission without the tariff-making function. Ten years of experience under this resulted in the establishment of a mandatory commission with the power to pre-

scribe rates. Wisconsin abandoned her granger law after giving it only a two years' trial. This so-called Potter law of Wisconsin was the most stringent of the granger statutes, and was in force from 1874 to 1876, at a time of severe financial depression. Unfortunately, the Wisconsin law, instead of being modified, was discarded in 1876. A new railroad commission was established in 1905, vested with greatly enlarged powers. The Illinois commission was kept a board with mandatory powers; it was successful, and exerted a strong influence upon the form of organization adopted by the other States in establishing railway commissions.

The trend of English and American legislation for the regulation of railways is toward commissions with power to execute the laws, to enforce their decisions, and to prescribe railway rates. In 1888 the State of Iowa changed from an advisory to a regulative commission with rate-making power, and the Iowa law has strongly influenced the legislation of other States. In 1897 South Dakota reorganized its commission by a statute which follows the Iowa law very closely. That year Florida and Tennessee took similar action. Thirteen mandatory commissions have been created since 1904. There were 35 in 1908. These facts, however, do not prove that the advisory commission may not be successful under certain conditions. The Massachusetts and other Eastern commissions have succeeded quite as well as have those of the West and South. Where the economic and transportation conditions are fairly stable and the friction between the railways and the public is not great, and where public sentiment is readily crystallized into legislation, a railway commission whose functions are to educate the people and teach the legislatures what to do, can succeed, as is shown by the experience of the New England commissions, in securing the regulation of rail-

way transportation. Whether a State in establishing a railway commission should adopt the supervisory or the mandatory type depends upon social and economic conditions.

Under our system of government the street-railway companies are amenable to two authorities: the city in which they operate their lines, and the State from which they derive their charters. The States possess the authority to regulate street-railway transportation, and there is an increasing tendency in numerous States to exercise their powers. In Massachusetts, for instance, the State railway commission must approve of the location of a proposed street-railway before the line can be constructed, and the commission may refuse to permit the road to be constructed if it does not consider that there is a "sufficient public demand or necessity to require or justify the building of the railway upon the proposed route." The State railway commission of Massachusetts can also control the capitalization of the street-railway companies. By the law passed in 1894, the companies can issue "only such amounts of stocks and bonds as may from time to time, upon investigation by the Board of Railroad Commissioners, be deemed and be voted by them to be reasonably requisite for the purposes for which such issue of stocks or bonds has been authorized."

In 1895 New Hampshire passed a law giving its railroad commission a like control over street-railway capitalization. This New Hampshire law gives the Supreme Court of the State power to decide whether the public good requires the proposed road. Before deciding the question the court is required to refer it to the railroad commission or a board of referees for a finding of facts. The power of the railroad commissions of Massachusetts and New Hampshire to control the increases in capitalization applies to both steam-railroad companies and street-railway

corporations. In Texas, also, by a law passed in 1893, the commission is vested with authority to control the amount of stocks and bonds which a steam-railroad company may issue. Connecticut now limits the amount of bonds that a street-railway company, chartered after 1893, may issue, to 50 per cent of the actual cost of construction and equipment of the road bonded, and compels a company which proposes to build a street-railway paralleling an existing street-railway or steam-railroad to satisfy a judge of the superior court that "the public convenience and necessity require the construction of such street-railway." Unlike Massachusetts and New Hampshire, Connecticut did not confer on her railroad commission the function of regulating the location and capitalization of her street-railways. Maine gives her commission power to pass upon the public necessity of a proposed street-railway. The same is true of New York State. In Vermont the railroad commissioners have no control over the location of a street-railway unless the street-railway corporation and the local authorities fail to agree. In case of a failure to agree, either party can appeal to the railroad commissioners.

In several States the railroad, corporation, or public utilities commission is given the same authority over street-railways as over other railroads. In the case of the commissions created since 1900, the general, though not invariable, rule has been to place street-railways and steam-railroads under the same control.

In practically all the States whose commissions have been established during recent years the example of Massachusetts has been followed as regards the collection of the statistics both of the street-railways and of the steam-railroads.

The foregoing account of the origin of the State railway commissions, and of the general powers with which

those boards have been vested, shows that while progress has been made by the States in legislation for the regulation of railroad transportation, much has yet to be accomplished before the States will have done all they can and ought toward solving the problem of railway regulation. There are eight States and Territories in mainland United States having no commission whatever, and there are several other States whose commissions have been endowed with powers entirely inadequate to the performance of the functions they should exercise. There is also urgent need for greater uniformity in the laws and practises of the several States concerning railway supervision and regulation. The laws at present are very diverse. Though each State can supervise and regulate only its domestic traffic, it deals in nearly all cases with corporations which do business in several States. These corporations, finding that each State imposes a different set of requirements upon them and attempts to control their business in a manner different from every other State, are often disposed to disregard the laws of the States. If all the State commissions were attempting to do the same thing by uniform methods, they would be able to accomplish much more.

Of the various powers of the commissions which demand revision and enlargement in order to render them uniform and adequate, there are none so important as those concerned with railway accounting. It is fundamental to the regulation of the railways by the States that there should be one uniform system of accounts obtaining in all the States, and that each State should have those accounts publicly audited by expert railway accountants. Each State must possess full and accurate knowledge of the business and finances of its railway corporations; there must be public inspection of uniform accounts.

The State railway commissions have performed useful

work. Although they have not accomplished all that was hoped for, yet when the difficulties of the task assigned them and the limitations under which the commissions have worked are considered, they can not be said to have been a failure. The retention and statutory development of the State commissions, by giving them uniform and, in the case of several commissions, more adequate powers, seem justified by what has thus far been accomplished.

REFERENCES FOR FURTHER READING

Clark, F. C. State Railroad Commissions, and how they may be made Effective. Publications American Economic Association, vol. vi, No. 6, 1891.

Meyer, B. H. Railway Regulation under Foreign and Domestic Laws. Report of Industrial Commission, vol. ix, pp. 901–1004.

Dixon, F. H. State Railroad Control, with a History of its Development in Iowa, 1896.

Railroad Control in Nebraska, Political Science Quarterly, vol. xiii, 1898.

Martin. History of the Grange Movement.

Adams, C. F. Railroads: Their Origin and Problems. 1878.

Report of the New York Legislative Committee of 1879. [This is usually styled the Hepburn report. It is a most valuable document.]

Hendrick, F. Railway Control by Commissions, 1900, ch. ix.

Decisions of the United States Supreme Court: Munn *vs.* Illinois and Peik *vs.* Chicago and Northwestern Railway Company, 94 U. S., 113 *et seq.*; Wabash *vs.* Illinois, 118 U. S., 557.

Annual Reports of Proceedings of National Association of Railway Commissioners, published by Interstate Commerce Commission, Washington, D. C.

Annual Reports of the State Railroad Commissions, particularly of the Massachusetts, New York, Illinois, Iowa, and Texas Commissions.

Railways in the United States in 1902. Part IV. "State Regulation of Railways," published by the Interstate Commerce Commission, Washington, D. C.

Huebner, G. G. Five Years of Railroad Regulation by the States. Annals of American Academy, vol. xxxii, July, 1908.

CHAPTER XXVI

RAILWAY REGULATION BY THE FEDERAL GOVERNMENT—THE INTERSTATE COMMERCE COMMISSION

SHORTLY after the establishment of the first State railway commissions an agitation was begun for the Federal regulation of railroads. The demand was pressed most urgently by the people of the middle West, who were producing great quantities of grain and other food products which they wished to market in the eastern part of the United States and in Europe. After the close of the civil war the industrial development of the upper Mississippi Valley was especially rapid, and the need for cheaper transportation facilities was keenly felt.

An appeal was made to Congress for legislation, and in 1872 President Grant recommended Congress to appoint a committee to investigate the question of securing "cheaper transportation of the constantly increasing Western and Southern products to the Atlantic seaboard." Such a committee was appointed by the Senate. Its chairman was William Windom, of Minnesota, and the report made in 1874 contained a full discussion of the regulation of railway transportation. The Windom report (Sen. Rep. 307, 43d Cong., 1st Sess.) argued at length to prove that Congress had the constitutional power not only to regulate railroads, but to construct and operate them. The committee did not recommend that Congress fix the rates to be charged by the companies, but suggested that Congress should improve and extend the

natural waterways and should build a freight railroad from the Mississippi River to the Atlantic. This recommendation was made because the committee thought that the surest way to secure cheap rates was by means of competition, and believing that the railroad companies would combine and thus avoid competition in rate-making, the committee advocated "the State ownership or control of one or more lines which, being unable to enter into combination, will serve as regulators of other lines."

The recommendations of the Windom committee overestimated the necessity of enforcing competition in rate-making and undervalued the ability of the railroads to cheapen the costs of moving bulky freight. During the ten years following the submission of the Windom report the efficiency of the railroads as freight carriers was so increased that only the Great Lakes, the largest rivers, and a few specially well located canals could carry even heavy articles as cheaply as they could be moved by rail. Competition in its various forms reduced rates on long-distance traffic between rival cities to a lower figure than the public had supposed possible; but the charges on local traffic to and from the stations served by only one railroad were not correspondingly reduced, and gross discriminations resulted. The public demand for cheap transportation was changed to a demand for the abolition of unreasonable discriminations.

This is clearly shown by the second important Federal report on railway regulation—the one made in 1886 by a committee of the Senate and called the Cullom report (Sen. Rep. No. 46, 49th Cong., 1st Sess.), from the chairman of the committee, Shelby M. Cullom, of Illinois. "The paramount evil," said the Cullom committee, "chargeable against the operation of the transportation system of the United States as now conducted is unjust discrimination between persons, places, commodities, or

particular descriptions of traffic." The main object of Government regulation was no longer considered to be to secure cheap transportation, but to insure to all persons and to different places relatively equitable charges.

A year after the Cullom report was made the present Interstate Commerce Act became a law. Prior to this time numerous attempts had been made to secure legislation. January 20, 1874, the House of Representatives passed the McCreary bill (so named from the chairman of the Committee on Railways and Canals) with provisions similar to the "granger laws" which several States had enacted. The country as a whole was not in favor of applying the granger legislation to the Federal regulation of railroads, but in December, 1878, the House passed the Reagan bill, which had been championed by Representative (later Senator) John H. Reagan, of Texas. This was a conservative measure that prohibited pooling and discriminations, required rates to be published, and placed the enforcement of the law in the hands of the courts instead of a commission. The bill applied only to freight traffic and to that carried in car-load lots. The Senate did not act on the Reagan bill of 1878. In 1885 the Senate and the House each passed a bill, but legislation was prevented by the differences of the two houses as to the provisions to be included in the law. It took two years for the House and Senate to agree, and then, February 4, 1887, they compromised on the law which, with many amendments, is the one now in force.

As the States endeavored to regulate the railroads they realized more and more that the problems to be dealt with were closely connected with interstate commerce and could not be handled successfully without the cooperation of the National Government. The demand for Federal action was made by the Eastern as well as the Western and Southern sections of the country as soon

as the fact was clearly ascertained that the authority of each State over railway charges was limited strictly to the traffic that did not pass the boundaries of the State. Before 1886 several of the States regulated charges on all the traffic originating at or destined to points within their respective boundaries. In 1886 the Supreme Court in the Wabash decision, referred to in the previous chapter, limited the authority of the State strictly to the *intrastate* traffic and excluded that moving from one State to another. This decision of the Supreme Court greatly narrowed the jurisdiction of each State over railway charges, and increased the need for congressional action.

The interstate commerce law as now amended contains twenty-four sections, and applies to passenger and freight traffic, carried by railroad or by railroad and water, to express and sleeping car companies and to the transportation of oil by pipe lines. It does not apply to intrastate business or to interstate traffic carried by an all-water route.

The first section prohibits free passes and unreasonable or extortionate charges, and makes it unlawful for a railroad company to produce the commodities it transports, timber products excepted; section two declares unlawful all unjust personal discriminations, and section three forbids unreasonable discriminations between localities and different kinds of traffic. These three sections contain the essential principles of the statute.

Section four of the statute makes it "unlawful for any common carrier subject to the provisions of this act to charge or receive any greater compensation in the aggregate for the transportation of passengers or of like kinds of property, under substantially similar circumstances and conditions, for a shorter than for a longer distance over the same line, in the same direction, the shorter being included within the longer distance." This "long

and short haul clause" of the act was inserted in the law because of the prominence in this country of the particular form of discrimination against which it was directed. The large volume of long-distance traffic competed for by rival railroads brought about such reductions in the charges for through traffic as to make the local rates for shorter distances much higher than those on competitive business. There was much difference of opinion regarding the advisability of including this section in the law. The House of Representatives favored its inclusion in the law and its enforcement under all circumstances, but the Senate foresaw that unless the provisions of the law were made less rigid, carriers might frequently lose their traffic at competitive points and be obliged because of the law to depend even more largely for their income upon the receipts from the local traffic. The enforcement of a long and short haul clause under those conditions would injure both the local shipper and the carrier. For this reason the Interstate Commerce Commission established by the act was given power to suspend the operation of section four for certain carriers in special cases after an investigation of the conditions of competition. The commission has exercised this power in several instances.

Section five prohibits competing railroads from pooling their freights or their aggregate or net earnings. No provision of the law has been more debated than this antipooling clause. It was insisted upon by the House against the judgment of the Senate. The House believed that enforced competition in rate-making by rival carriers would be better for the public than freedom of interrailway cooperation. It now seems clear that the prohibition of pooling was a mistake, and that the national regulation of railroads would have been more successful had pooling been permitted.

The sixth section of the law stipulates that all rates and fares shall be printed and kept open to public inspection. No changes shall be made in these printed charges, except upon thirty days' notice, but the commission has power to permit a change upon shorter notice. Rates, fares, joint tariffs and notices of changes must be filed with the commission. Only published rates are lawful.

Section seven makes it unlawful for any carrier subject to the act to interrupt unnecessarily the continuous passage of freights from the point of shipment to the place of destination. The law was not to be made to interfere with through shipments by any effort to change an interstate shipment into two or more intrastate shipments.

Sections eight, nine, and ten of the statute provided penalties for violations of the law. Certain violations originally were made punishable by fine, others by fine or imprisonment. If the common carrier disobeying the law was a corporation, only the officer or agent who violated the law was punished. This was a defect in the act. The officers who disregard the law usually do so with the knowledge of the corporation they are serving, and the corporation should share penalties with them. This defect in the law of 1887 was remedied by the Elkins law of February 19, 1903, by which the corporation as well as its agents or officers may be punished. Fines ranging from $1,000 to $20,000 were imposed. The imprisonment clause was repealed, but was restored in 1906. The Elkins law also stipulated that the recipient of the rebate or discrimination as well as the giver shall be guilty of a misdemeanor. Persons claiming damages may make complaint to the Interstate Commerce Commission or may bring suit in any district or circuit court of the United States, but no one may pursue both remedies.

Section eleven as amended creates an Interstate Com-

merce Commission of seven members, to be appointed by the President of the United States with the consent of the Senate. Not more than four commissioners shall be of the same political party. The commissioners are not allowed to own railway securities, and are not permitted to "engage in any business, vocation, or employment" while in office. The term of office is seven years, and the salary is placed at $10,000 a year. The principal office of the commission (section nineteen) is fixed in the city of Washington.

Sections twelve to twenty-two inclusive outline in detail the powers and duties of the commission. The powers which Congress has bestowed on the commission by the act of 1887 and supplementary laws are like those of the Illinois commission over State traffic, minus the power of prescribing schedules of maximum rates. It is a mandatory commission, having the power to revise rates and enforce its orders.

The commission is given full power to make investigations, can compel carriers to produce their books and papers, and to give testimony. No witness may refuse to testify even though his testimony may tend to criminate himself, "but no person shall be prosecuted, or subjected to any penalty" on account of his testimony. Investigations may be begun upon the complaint of some party seeking redress, or may be instituted by the commission upon its own motion; but changes in rates can be made only on complaint. When the commission makes an investigation it must report its decision in writing, and if damages are awarded it must include a statement of the facts the conclusion is based upon. The commission can order violators to desist from their illegal acts, and may award damages to be paid to those who may have suffered by those illegal doings.

The orders of the commission at present have the bind-

ing force of an act of legislation. The carrier against whom the commission's order is directed must obey the order, unless the order is suspended or annulled by injunction of a Federal court having jurisdiction. When an order of the commission is disobeyed the commission may appeal to a United States circuit court to enforce the order. In the trial to decide whether the order shall be enforced, the commission's findings of facts must be accepted by the court as "*prima facie* evidence as to each and every fact found."

It was supposed by the framers of the law that this clause in the act placed in the hands of the commission the entire work of investigating and deciding upon the facts, and that the court would exercise only its power of reviewing any questions of law which might be involved in enforcing the commission's orders. Such, however, has not been the practice of the courts, which have allowed the defendants to introduce evidence into the trial which had not been submitted to and passed upon by the commission. This ruling of the courts, which was first made in 1889,[1] was long a detriment to the commission as an investigating body. The parties complained against often regarded the commission's investigation as a preliminary one, and instead of answering the charges fully before the commission, reserved important testimony for a later trial before the court. The Supreme Court did not approve of this practice by the lower courts. Moreover, the act of June 29, 1906, has carefully prescribed the proceedings.

It is not to be inferred from the foregoing statement regarding the power of the commission to institute judicial proceedings to enforce its own orders that the com-

[1] By Associate-Justice Jackson in Kentucky and Indiana Bridge Company *vs.* Louisville and Nashville Railroad Company, decided January 7, 1889.

mission is made a public prosecutor charged with the duty of bringing before the courts all violations of the interstate commerce law. The offenses made criminal by that law are punishable through and by the ordinary machinery of the Federal courts, and it is the function of the courts to punish crimes arising under the interstate commerce law the same as under any other statute. The purpose of the commission is to aid the courts in securing an observance of law.

Each carrier subject to the act is obliged to make an annual report to the commission containing detailed statistical information concerning capitalization, equipment, labor staff, business done, receipts, operating and other expenses, etc., and also "a complete exhibit of the financial operations of the carrier each year, including an annual balance-sheet." The commission is also given the power to prescribe a uniform system of keeping accounts to be adopted by all carriers, subject to the act. The law of 1887 did not give the commission the power to inspect and audit the accounts of railways, but the act of 1906 did, and July 1, 1907, the commission prescribed uniform accounts. The annual reports required by the Federal commission and those of the State commissions, most of which had previously adopted the form of report sent out by the national board, have done much to harmonize the systems of railroad accounts.

The operation of the interstate commerce law from 1887 to 1906 was very unlike what its framers expected, because the courts so interpreted the main provisions of the law as greatly to limit its scope. The act of 1887 was initial legislation by Congress upon a problem of great magnitude, and it was hardly possible for Congress to foresee and meet all the economic and legal questions involved. The enforcement of the decisions of the commission being vested in the courts, the commis-

sion's interpretations of the law were reviewed by numerous decisions of the courts. The judges of the Federal courts in fact not only assisted in administering the law by enforcing or setting aside the rulings of the commission, but they were also virtually fellow commissioners. Suits instituted by the commission for the enforcement of its decisions were turned by the courts into investigations of the various economic problems of railway regulation—inquiries which Congress intended to entrust solely to the commission—and the courts rendered decisions based quite as much on their own as on the commission's interpretation of the facts. Congress intended to give the commission the final decision as to the economic questions, and to confine the courts to questions of law; but in practice it was found that the legal and economic questions could not be kept distinct, because often the legal points involved were concerned with the reasonableness of rates, questions in equity that must be determined by considering economic data. The amendments made by the act of 1906 remedied this and strengthened the law.

The operation of the interstate commerce law centers in the work of the commission as an investigating body, and as a board for the equitable adjustment of transportation charges. The following account covers the history for the period of twenty-one years, 1887–1906; it relates the experience of the commission under the act of 1887, and thus explains why the law was amended in 1906.

Although the law gave the commission extensive power to investigate, and although the findings of the commission as to facts were to be taken by the courts as *prima facie* correct, the practice of the courts in receiving *new* evidence (not previously presented to the commission), and of basing their decisions on this new evidence as well as upon the commission's finding of facts, lessened the efficiency of the commission. Further-

more, for six years—from 1890 to 1896—the power of the commission was seriously restricted by a refusal on the part of the Federal courts to compel witnesses to give testimony of an incriminating nature. The law as enacted in 1887 stipulated that no witness might refuse to testify on the ground that his testimony might tend to criminate him, but protected the witness from *criminal* prosecution based on the testimony he might give as a witness. The courts maintained that the witness must be "afforded absolute immunity against future prosecution" (Counselman *vs.* Hitchcock, 142 U. S., 547), in order to enjoy the protection guaranteed to him by the fifth amendment of the Constitution, which contains the clause "nor shall he be compelled, in any criminal case, to be a witness against himself." In 1893 Congress passed a law which gave a witness protection against any prosecution, civil or criminal, on account of any testimony or evidence submitted. This law did not, however, immediately settle the question, because certain inferior Federal courts still maintained that the witness was not afforded the protection guaranteed him by the fifth amendment. The matter was finally disposed of by the United States Supreme Court in the Brown case, decided March 23, 1896 (Brown *vs.* Walker, 161 U. S., 591). One Theodore F. Brown, auditor of the Alleghany Valley Railroad, refused to testify before the Federal Grand Jury of the Western District of Pennsylvania regarding rebates alleged to have been given by two fellow officers. The district judge held him guilty of contempt of court, and when the case reached the Supreme Court on appeal it was decided that the full immunity from prosecution afforded by the interstate commerce law as amended in 1893 was all the protection a witness could claim under the Constitution. Thus, in 1896, the commission definitely obtained compulsory power of investigation, but for much of the

time for six years it had been able to secure only such facts as witnesses might choose voluntarily to give.

The interstate commerce law, as was stated above, forbids unreasonably high and unjustly discriminating charges, establishes a commission to decide whether the rates and fares are reasonable and just, and provides that upon the complaint of any shipper or passenger, or upon its own motion, the commission may investigate specific charges and practises of the carriers to determine whether the law is being observed. If the commission finds that carriers are charging unreasonable or unjust rates, or are engaging in practises prohibited by law, it may order the carrier to desist from making such charges or engaging in such practises, and may award damages to the complaining parties who have suffered losses. For ten years it was the practise of the commission, when ordering a carrier to desist from charging an unreasonable rate, to name the rate that would be reasonable, and to order the carrier to put in force a rate not exceeding the one named by the commission; but in 1897 the Supreme Court in the Maximum Rate Case (Interstate Commerce Commission *vs.* Cincinnati, New Orleans and Texas Pacific Railway Company, 167 U. S., 479) decided "that the power to prescribe rates or fix any tariff is not among the powers granted to the commission." By this decision the commission's power over rates was limited to deciding what ought not to have been, but the act of 1906 gave the commission power to revise rates.

The extent of the power which the commission has or ought to have over rates is chiefly significant from the standpoint of its influence upon relative rates rather than upon absolute charges. It is in the adjustment of rates among different commodities, and what is still more vital, among competing localities and among rival carriers —that is, in the enforcement of sections three and four of

the law—that the most important work of the commission is done.

The fourth section, which contains the prohibition against charging more for the shorter than for a longer haul "over the same line" when the shorter haul is included within the longer and is in the same direction, makes a specific application of the general principle enunciated in the third section—the principle that no "undue or unreasonable preference or advantage" shall be given "to any particular person, firm, corporation, or locality, or any particular description of traffic." The importance of section four, however, is not lessened by the fact that it is but a specific application of section three. Of the transportation abuses in the United States due to competition and demanding governmental regulation, none was so great in 1887 as that of local discriminations whereby the smaller non-competitive points were made to pay higher rates than those places having several rival carriers. These local points were not very often charged rates which were exorbitant *per se*. It was in the relation between local and competitive rates that the evil lay. In many instances this abuse involved a greater charge for a shorter than for a longer haul; hence, the fourth section was placed in the act of 1887.

The Interstate Commerce Commission under the present law is accomplishing an increasingly effective regulation of interstate commerce; it, however, depends more upon the provisions of the second and third sections of the act than upon the fourth.

The restriction in section four that the charge for the short haul shall not exceed that for the longer one applies to "the transportation of passengers or of like kinds of property, *under substantially similar circumstances and conditions*," and "*over the same line*." The scope of this section depends upon what is meant by the same

line and by similar circumstances and conditions. For a while it was held by some courts that a joint line composed of two or more roads formed an individual line distinct from those formed by the roads which together made up the joint line, and, accordingly, that shipments over the joint line and over the component roads were not shipments "over the same line." On this ground it was contended that the through or joint-line charges might be less than the charges for a shipment over one of the roads forming the joint line. Since a large part of interstate railway traffic consists of joint-line business, this definition of the word line threatened to rob the fourth section of much of its validity; but in 1896 the Supreme Court in the Social Circle case (Cincinnati, New Orleans and Texas Pacific Railway *vs.* Interstate Commerce Commission, 162 U. S., 184) refused to accept the narrow technical definition of the word line, and held that the charges on one of the component roads must not exceed the joint-line charge.

The interpretation which the Supreme Court had put upon the phrase "under substantially similar circumstances and conditions" was much less fortunate for the commission and for its work of railway regulation. One of the first questions which the commission was called upon to decide in the administration of the law was what constituted such dissimilarity of circumstances and conditions as to justify a railway company in charging more for a shorter than a longer haul. The reason why the railroads made such discriminations in favor of the longer haul was competition. The competition of the railroad was sometimes with rival waterways not subject to the Interstate Commerce Act, and sometimes with other railways regulated by that law. As it was not the intention of Congress in passing the act of 1887 to do away with competition among the carriers subject to that law, the

commission ruled that the competition of rival railways, each subject to the regulation provided for by the act of Congress, did not constitute the dissimilarity of circumstances and conditions to which the fourth section of the law referred. The competition of railways with waterways—a different kind of a transportation agency, the traffic upon which was not subject to governmental regulation—was, however, held to create circumstances and conditions which were dissimilar and which might justify a less charge for the longer distance. Such was uniformly the ruling of the commission until November, 1897, when the Supreme Court in the Troy case (Interstate Commerce Commission *vs.* the Alabama Midland Railway Company and Others, 168 U. S., 144) decided that competition between rival railways may create dissimilarity of circumstances and warrant a disregard of the fourth section.

This ruling of the Supreme Court deprived the fourth section of the interstate commerce law of most of its vitality. It was included in the law to prevent a very prominent kind of discrimination that was caused by competition. The law did not remove the cause, but sought to limit the operation of the cause by declaring the resulting practises illegal. The court virtually held in the Troy case that the result is justified by the presence of the cause.

Goods imported into this country are frequently shipped on through bills of lading from the foreign port to the interior American city of destination, and the railroad charge from the American port to the point of destination is a part of a through rate. This through rate fluctuates with the frequent variations in ocean freight rates, and the portion received by the American railroad is usually much less than the rate charged for carrying domestic goods between the seaboard and interior cities.

The importer is favored more than the domestic shipper. Indeed, the through rate from the foreign port to the interior point in this country is sometimes less than the charge from the American seaboard to the same inland city. In the Import Rate case the Interstate Commerce Commission took the ground that the interstate commerce law did not apply to traffic from a foreign country not adjacent to the United States, that the commission could not properly consider the circumstances and conditions of competition affecting such traffic, and that a higher railroad charge on domestic traffic than on goods imported was an unjust discrimination. This decision of the commission, however, was overruled by the Supreme Court March 30, 1896 (Texas and Pacific Railway Company *vs.* Interstate Commerce Commission, 162 U. S., 197). The Supreme Court opened the door to discriminations, but it widened the scope of the law.

Although the ability of the commission to accomplish its main purpose—the adjustment of rates and fares—was restricted prior to the act of 1906 by the narrow scope given by the Supreme Court to the act of 1887, the commission achieved several important results: (1) Publicity of rates had been secured, and the public knowledge of railway affairs had been increased by the excellent statistics collected and published; (2) the interstate commerce law had been of service in reducing the number of freight classifications of the country; (3) by its informal as well as its formal investigations the commission had done much to bring about a better adjustment of railway charges, as between different localities, different commodities, and different shippers; (4) the work of the commission had been of great educational value. Its reports had considered in a clear and comprehensive manner the important phases of the railway question as they had presented themselves year by year, and its

decisions, comprising eleven volumes, to 1906, had developed a serviceable and valuable administrative code regarding railway regulation.

Twenty years' experience under the act of 1887 indicated clearly the powers with which the commission must be vested in order to perform adequately the work of regulating railway transportation. By 1906 the need of four changes in the law was clear.

1. The commission should possess the power, under such restrictions as will safeguard the business of the carriers, to inspect and audit the accounts of interstate railways. The railroads should be required to keep their accounts according to a uniform system acceptable to the Government. By giving the commission these powers, the detection of discriminations would be made easier and the value of the statistics of railways would be somewhat increased.

2. The commission should be the sole and final judge as to the facts in controversies between the carriers and the public. Whenever the courts in reviewing the decisions of the commission think a further investigation into the facts to be necessary, the courts should be required to refer the case to the commission for reconsideration.

3. In order to perform its chief task—that of adjusting railway charges—the commission must have the power to decide what is a reasonable and lawful rate. After the commission has determined by means of a full and careful investigation instituted upon the complaint of some interested party that a particular rate being charged by a carrier is unreasonable, the commission should have the power to name the rate that under the existing circumstances is reasonable and lawful.

4. The decisions and orders of the commission as to rates and other matters should be binding upon the carrier, unless the enforcement of the order is suspended by

an injunction of a Federal Court acting upon the appeal of the carrier. The act of 1887 erred in permitting the carrier without penalty to ignore an order of the commission. The carrier should be required either to obey the commission or to take it into court. In order to avoid delays in securing the enforcement of the commission's orders and in securing a final adjudication of the points of law arising in reviewing the orders of the commission, the carrier's appeal for relief from the orders of the commission should be made to the United States Circuit Court, from which appeal should lie to the Supreme Court, which should, and naturally would, be the final judge of questions of law.

The legislation of 1906 conferred these and other powers upon the commission. The general authority to prescribe rates and fares was not given, and wisely not. The act of 1887 was so amended, as regards rate control, as to enable the commission, after a full investigation of all the facts, to correct such particular charges as might be found unreasonable or unfair, and to correct them promptly without the delays which have in the past so seriously impaired the efficiency of the commission as a body for the regulation of railway transportation.

The ideal sought in the government regulation of railways is to establish and maintain equitable relations between the carriers and the people whom they serve, and the fact must be kept in mind that this ideal can not be attained solely by statutory prohibitions. Laws necessarily deal mainly with effects rather than with causes. Unreasonable discriminations have been made illegal, but violators of the law must stand condemned at the bar of public opinion. In America only those laws can be enforced that give expression to public opinion, and in order to make unjust discriminations impossible in the railway business, the public must come to feel that it is

as much a crime for a public carrier, chartered by the state to perform its function of providing transportation, to deny to one individual or community advantages to which they are as justly entitled as are other persons and communities receiving the advantages as it would be for the Government to favor some citizens and sections and discriminate against others.

REFERENCES FOR FURTHER READING

Report of the Windom Committee, 1874, Senate Report 307, Forty-third Congress, First Session.

Report of the Cullom Committee, 1886, Senate Report 46, Forty-ninth Congress, First Session.

Annual Reports of the Interstate Commerce Commission.

Report of the Industrial Commission, vol. xix, pp. 419–444.

MEYER, B. H. The Interstate Commerce Commission, Political Science Quarterly, vol. xvii, September, 1902.

DABNEY, W. D. The Public Regulation of Railways. 1889.

DOS PASSOS, J. R. The Interstate Commerce Act: An Analysis of its Provisions. 1887.

SELIGMAN, E. R. A. Railway Tariffs and the Interstate Commerce Law, Political Science Quarterly, vol. ii, 1887.

HENDRICK, F. Railway Control by Commissions, ch. viii.

Compendium of Transportation Theories, edited by C. C. McCain.

KIRKMAN, M. M. Railway Rates and Government Control. 1892.

STICKNEY, A. State Control of Trade and Commerce by National or State Authority. 1897.

Year-Book of Railway Literature, vol. i, 1897. [A series of papers compiled by H. P. Robinson and published by the Railway Age, Chicago. The volume contains, among other papers, the opinions of the Supreme Court and of the dissenting justices in the Trans-Missouri case, United States *vs.* The Trans-Missouri Freight Association, 169 U. S., 290; also the opinion of the Supreme Court in the Maximum Rate case, Interstate Commerce Commission *vs.* Cincinnati, New Orleans and Texas Pacific Railway, 167 U. S., 479.]

DIXON, F. H. The Interstate Commerce Act as Amended, Quar. Jnl. Econs., vol. xxi, pp. 22-49, 1906.

SMALLEY, H. S. Rate Control under the Amended Interstate Commerce Act, Annals, Amer. Acad., vol. xxix, pp. 292-309, 1907.

CHAPTER XXVII

THE COURTS AND RAILWAY REGULATION

The function of regulating railways is shared jointly by all three branches of the Government—the executive, legislative, and judicial. The scope and limits of the legislative powers of railway regulation have been fixed by the courts, and the courts have so modified both State and national legislation as virtually to have shared with the law-making branch of the State legislatures and with Congress the exercise of legislative functions. Much law is accurately styled court-made, and this is particularly true of the laws regulating railways.

This influence of the courts upon the laws regulating railways is strikingly illustrated by the decision of the Supreme Court in United States *vs.* Trans-Missouri Freight Association (166 U. S., 290), in which the court decided that the antitrust law of July 2, 1890, applied to railway companies, and made illegal the agreements of competing railway companies for the maintenance of reasonable rates. This law declared illegal "every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several States, or with foreign nations," but was not generally supposed to apply to railway companies nor to rate agreements between such carriers. Indeed, this view of the law was entertained by the United States Circuit Court and the Circuit Court of Appeals in the Trans-Missouri Freight Association case; but the Supreme Court by a close decision—five

judges approving, four dissenting—decided that the law of 1890 did apply to railroads, and made unlawful all agreements between rival roads for the maintenance of reasonable rates. The interpretation thus put upon the "antitrust" law by the Supreme Court compelled the reorganization of railway traffic associations, modified the methods of railway management, and gave a new phase to the governmental regulation of railroads.

The division of the functions of our Government among its three branches—the legislative, executive, and judicial—while sharply drawn, is not complete. The Legislature exercises executive functions, the executive participates in legislation, and the judiciary by interpreting and applying the laws validates or invalidates and restricts or widens the scope of legislation. The courts also cooperate with the executive in the enforcement of laws. The powers of the judiciary as regards transportation and all other subjects are derived from three sources: the organic law of the constitutions, the statutory laws, and the common law. The national and State constitutions confer upon the judiciary the general power of interpreting and applying the law, and enumerate the subjects over which the courts shall have jurisdiction. The powers over railways conferred upon the courts by State and Federal statutes are given in the two preceding chapters. The courts are required to assist the commissions, State and Federal, by compelling recalcitrant witnesses to appear and testify before those bodies; the State's attorneys are the officers charged with the duty of prosecuting the violators of laws for the regulation of railways, and for prosecuting those who disobey or ignore the orders of the commissions; the Federal statute of 1887 made the validity of the commission's orders dependent upon the decrees of the courts, and by doing this it made the courts what Congress had no intention of

making them—joint investigators with the commission of the facts concerning transportation questions arising under the law. This was wisely changed in 1906.

The power of railway regulation which the judiciary has in its equity powers derived from the common law is far greater than its statutory powers, and of much more significance to the public welfare. The authority which the courts have been given by statutes is definite and fixed, but the scope of equity jurisdiction, except where determined at certain points by law, may be extended at the will of the judiciary. Indeed, the rapid extension of the equity powers of the courts is the most characteristic fact of the past century's legal history.

It has been in the exercise of their equity powers over three subjects that the courts have exerted their strongest influence upon governmental regulation of railways. Those three subjects are (1) the fixing of rates and fares by State authority; (2) the intervention of the Government in railway labor disputes; and (3) railway receiverships or the management of insolvent railroads by the courts.

A court has no authority to make railway rates, but it has the power to unmake them if they are unreasonable or unjust. When the rates and fares are fixed by a State government for a railroad company, the reasonableness of any charge involves a question of equity of which the courts are the final judges. Indeed, in the United States the reasonableness of any State-named tariff, whether for interstate business or for local traffic carried on by a company whose activities are confined entirely within a single State, may be determined by the Federal courts.

The fixing of rates by governmental authority is a legislative function. When the American States began to exercise this function the railroad companies sought to prove that the railway companies alone, and not the State legis-

latures, had the power to fix charges, and that if a shipper or passenger considered himself to have been overcharged his recourse must be to the courts and not to the Legislature. The Supreme Court of the United States settled this question in favor of the State legislatures in the "granger decisions" in 1877, and even went so far as to say that if the rate "has been improperly fixed, the Legislature, not the courts, must be appealed to for the change" (94 U. S., 113). However, the Supreme Court did not intend by this language to renounce its equity power of passing on the reasonableness of railway rates. Indeed, in 1885, in upholding a Mississippi law, the court stated (116 U. S., 307) "the power [of a Legislature] to regulate is not the power to destroy," and five years later the statute of Minnesota giving the Railroad and Warehouse Commission of that State the power to prescribe rates and making the commission's decision final as to what were reasonable charges was held by the Supreme Court to be unconstitutional, because "the reasonableness of a rate of charge for transportation by a railroad company . . . is eminently a question for judicial investigation" (134 U. S., 418).

Another important assertion of its equity powers over railway charges was made by the Supreme Court in 1898. A Nebraska statute, passed in 1893, fixing "reasonable maximum rates to be charged for the transportation of freights," gave the railroad companies of the State the right to bring action in the Supreme Court of the State to test the reasonableness of the rates fixed by the Legislature. If the court considered the rates to be unreasonably low and unjust, it could order the State Board of Transportation to raise the rates. The constitutionality of the law was soon tested. The railway companies took the ground that the rates fixed by the Nebraska statute were unreasonably low, and certain of their stockholders

not citizens of Nebraska sued in the United States Circuit Court for an injunction prohibiting the enforcement of the rates fixed by the State law, and such an injunction was granted. It was claimed by the attorneys for the State of Nebraska that the Federal Court had no equity jurisdiction in the suit, because the statute had given the railroad companies an adequate remedy at law by granting them the right to appeal to the Supreme Court of the State for an order on the Board of Transportation to correct any unreasonable rate. The Federal courts, however, did not accept that view, and the Supreme Court held that "one who is entitled to sue in the Federal Circuit Court may invoke its jurisdiction in equity whenever the established principles and rules of equity permit such a suit in that court; and he can not be deprived of that right by reason of his being allowed to sue at law in a State court on the same cause of action." (Smyth *vs.* Ames, 169 U. S., 466).

By this decision, rendered March 7, 1898, the Federal judiciary has included within its equity jurisdiction the prerogative of passing upon the reasonableness of any and every railway rate that is established by State legislatures in the United States. That the possession of this power by the Federal courts gives them an important place as a governmental regulator of railways is well illustrated by this decision in the Nebraska Freight-Rate case. The Supreme Court confirmed the injunction issued by the Circuit Court, and the Nebraska law of 1893 was declared unconstitutional, because the court believed that the legislature of that State had reduced the rates so much as to violate the fourteenth amendment to the United States Constitution, which declares that no "State shall deprive any person of life, liberty, or property without due process of law."

The courts have now fully established their right to

validate or invalidate the rates prescribed by the State legislatures or by Congress. Every rate fixed by law is now subject to review by the Federal courts. By a decision of the Supreme Court in 1908 (*Ex parte* Young, 209 U. S., 123), the constitutionality of a State-made rate may be tested by going directly to a Federal court.

The rates fixed by the companies on *intra*-State traffic are reviewable by the State courts; interstate rates by the Federal courts. If any carrier charges an extortionate rate or one that unjustly discriminates, the aggrieved shipper or passenger may sue the carrier for the recovery of damages. Indeed, this right of prosecution was possessed under the common law before the passage of laws prohibiting unreasonable railway charges. Theoretically this privilege gives each individual protection against losses from excessive or unjust charges for railroad transportation; but in practise this protection is very inadequate, because most persons will prefer to bear a slight injustice rather than to undergo the trouble, expense, and business risks that a lawsuit may involve. Furthermore, the business losses resulting from an unreasonable rate are seldom covered by the excessive amount of the charge; the chief losses are those caused by the injury done to the complainant's business. A discriminating rate may seriously cripple or ruin a shipper by diverting his business to a more fortunate competitor whose railroad charges are lower. One reason for the establishment of the State railroad commissions and the Interstate Commerce Commission was to provide a public agency whereby the aggrieved shipper or passenger might secure legal redress without expense.

Sometimes the courts have prevented the railroads from advancing rates. An instance of this occurred in November, 1898, when the United States Circuit Court at Denver, Col., issued a temporary injunction restraining the Southern Pacific and other railroads from putting into effect a

proposed advance of 33 per cent in the rates on iron and steel from Colorado points to the Pacific coast. The application for this injunction was made by the Colorado Fuel and Iron Company, whose products were in part marketed on the Pacific coast. The reasoning of the court in this case states very clearly the inadequacy of legal processes for the recovery of damages resulting from unreasonable rates. Among other things the court said: "If the rate shall be raised as proposed and complainant shall be excluded from the market, as stated in the bill will be the case, in case this notice is carried out, no compensation which can be obtained in damages would be adequate. It would be impracticable to show in an action at law what the losses resulting from such a procedure might be, and so it would seem that equity can afford the only adequate relief under such circumstances."

The courts have used their powers of injunction not only to prevent the railroads from charging excessive rates, but also to enjoin them from cutting rates. In preventing advances the courts have acted in the interests of shippers; in stopping rate reductions action was taken for the relief of the owners of the railway securities and of the shippers whose business might suffer. There is at least one instance of a rate war having been checked by injunctions of the courts. In July, 1896, a controversy arose between the Seaboard Air Line and the Southern Railway Company, two corporations controlling a large part of the traffic of the Southeastern section of the United States. The Seaboard Air Line began the rate-cutting by taking one-third off its rates on traffic to those points south of Baltimore where it had to meet the competition of its rival. The Southern Railway Company met this cut, whereupon the Seaboard extended the cut to its traffic from Boston, Providence, New York, and Philadelphia to Southern cities, and announced that if the

Southern Railway should meet the cut a further reduction would be made in the Seaboard's charges. The reply of the Southern Railway to this challenge was the announcement of a cut of 80 per cent, to go into effect ten days later, August 1, 1898.

At this stage of the war the United States District Court of North Carolina, Judge Simonton, was asked to enjoin the contending roads from carrying out the rate reductions that had been announced. The prayer for this injunction was made by the receiver of the Port Royal and Augusta Railway, an insolvent company forming one of the connections of the Seaboard Air Line. The prayer was based on the plea that the threatened rate war would result in "the certain destruction of the railroad property in the hands of the receiver." The court appealed to granted a temporary injunction until the 15th of August, but on that date the injunction was not made permanent, because some of the companies affected by the injunction were outside of the jurisdiction of the District Court of North Carolina.

With the removal of Judge Simonton's injunction the rate war broke out afresh, but the Federal courts were again successfully appealed to. This time an association of merchants, the Wholesale Grocers' Association of Augusta, appealed to Judge Speer of the United States District Court of Southern Georgia, sitting in Augusta, for an injunction against the railroads, on the ground that the low rates to Atlanta constituted an unjust discrimination against Augusta, Macon, and other cities, and violated section three of the interstate commerce law. Section twenty-two of the act passed in 1887 gives the district and circuit courts power to issue such an injunction as was asked for by the Augusta merchants, and on September 10th Judge Speer granted a temporary injunction, enjoining the railroad companies to restore the rate

that had been in force September 5th. The date for the hearing was fixed for the 24th. The Southern Railway Company restored its rates according to the order of the court, and the Seaboard did the same with its charges to some places. The Seaboard, however, had no line entering Atlanta, and there was some doubt as to the extent of the jurisdiction of the court that had issued the injunction; consequently, it did not restore its rates to all points. This difficulty as regards jurisdiction was settled by the issue of an injunction by Judge Hughes of the United States Circuit Court for the Eastern District of Virginia, sitting at Richmond.

This injunction of the Circuit Court is the most significant of the three that have been mentioned, because it was issued to protect the owners of railway bonds. The complainants were the Baltimore Trust and Guarantee Company and other financial institutions holding railroad bonds, who sued for an injunction on the ground that the rate war was destroying their property, and that they had no means of preventing that destruction by an action at law.

Before the 1st of October all rates were restored and the war was brought to an end. The courts did actually terminate a rate war, and did so by enjoining the railroads against charging rates that were unjustly low. One injunction was issued to prohibit illegal discrimination; the other two were to prevent the destruction of property. Inasmuch as the questions at issue in these cases did not reach the Supreme Court for adjudication, it was not finally settled that the Federal courts actually possess the power to declare rates unreasonably low as well as unreasonably high, but that the courts do have this power is rendered very probable by the issues of the above injunctions by three different Federal courts.

Another use of the equity power of the courts to control railway charges has been to enjoin railroad companies from secretly cutting rates. It was found by the Interstate Commerce Commission at the close of 1901 that the rates on grain, grain products, and packing-house products were being secretly cut, and that the published rates were not being observed. The giving of secret rates was a criminal offense, and the United States Department of Justice was informed by the commission that the interstate commerce law was being violated, but in this case, as in former instances, the Government was unable to enforce the criminal provisions of that law, because the persons who have knowledge of secret cuttings of rates are loath to give to the State evidence that may cause those who give the special rates (often their own business acquaintances) to be sent to prison. Realizing that the reliance upon criminal prosecutions for the prevention of rate discriminations would not secure the observance of the law, the Interstate Commerce Commission applied to the Federal Circuit Court at Kansas City and Chicago in March, 1902, to enjoin the leading railway companies of the central West to observe their published schedules of rates. Temporary injunctions were granted as requested; indeed, most of the railroad companies concerned were said to have welcomed the injunctions, because the restraining orders of the courts would enable the companies to enforce their published rates. Railroads do not usually cut rates because they wish to, but because they think they must in order to secure or hold traffic. Arguments as to making the temporary injunctions permanent were not heard in Chicago until December, 1902. The injunctions were allowed to stand, and the Elkins law of February 17, 1903, has now given the courts definite power to issue such writs of injunction.

Injunctions in Labor Disputes

In connection with the disputes between labor and capital, the equity powers of the courts have frequently been employed to protect the interests of one or the other of the contending parties or of the general public. By their intervention in railway labor controversies the Federal courts have exercised a regulative authority of considerable importance over the railroad service.

As the law in regard to striking has been interpreted by the American courts, railroad employees and other workmen have a right either singly or in a body to quit their employment at any time, provided they do not violate a contract in doing so, and provided they quit peaceably without violence and without concerted actions intended to injure their employer or his business. It is permissible for laborers to refrain from working, and to advise and encourage others, by peaceable argument and persuasion, to quit their employment. A strike may be legal, but in many, if not most cases, the strikers are led to resort to illegal acts, because the success of the strike depends upon their preventing their employer from securing other men to fill the places of the strikers. To accomplish this, intimidation and violence are frequently necessary.

In the case of railroad employees several exceptions have been made by State and Federal statutes to this general law of strikes. In order to prevent the loss of life and the destruction of property, laws have been passed making it a penal offense for a locomotive engineer, conductor, brakeman, baggage-master, or other railroad employee to abandon his engine, car, or train when it is *en route* to its regular destination, or to injure or disable any engine or car so that it will not be fit for immediate use. The courts have also held it to be unlawful

for an engineer on one road to aid a strike against some other road by refusing to haul the cars of such connecting company.

In numerous instances railroad companies and other employers have appealed successfully to the courts for the issue of mandatory writs enjoining strikers from destroying the property of the companies, from intimidating men to prevent their taking the places vacated by the strikers, and from doing such other acts as will render it impossible for the railroad company to perform its services to the public. During the past decade the courts have come to make these injunctions very comprehensive, and have prevented persons not only from destroying property and using threats, intimidation, or force to induce men to quit the service of a railroad or not to engage in its employment, but also "from *in any manner* interfering with" the movement of the trains. Moreover, and, what is more important, these injunctions, instead of being directed against only those persons named in the bills, have included "all persons combining and conspiring with them, and *all other persons whomsoever.*" Because of their wide scope, these writs have been popularly called blanket injunctions, and their purpose and effect have been to substitute for the punishments provided by the statutes against crimes the surer and speedier remedy of the mandatory processes of the courts sitting in the exercise of their equity powers.

The courts may in some instances order railway employees—while they remain in the service of their employer—to perform their regular services. Such an order was issued in 1893 by a Federal court in connection with a strike on the Toledo, Ann Arbor and Northern Michigan Railroad. This railroad connects with the Lake Shore road at Toledo, and the engineers on the Lake Shore were ordered by their brotherhood not to haul

the cars received from the Ann Arbor line. The Ann Arbor company, acting in accordance with the provisions of sections ten and twenty-two of the interstate commerce law, appealed to the courts for a mandamus to compel the Lake Shore to receive and haul the freight offered. The court granted the writ, and enjoined both the officers and *employees* of the roads connecting with the Ann Arbor to receive and forward its freight. The court admitted the right of the engineers to leave the employment of the roads connecting with the Ann Arbor, but declared that while the engineers continued in their employment a refusal to handle the freight received from the Ann Arbor company would be a contempt of court. This ruling of the lower court was upheld by the Supreme Court. In refusing to haul the freight received from the Ann Arbor company the engineers of the Lake Shore and other roads were obeying a by-law of the Brotherhood of Locomotive Engineers requiring its members to refuse to handle the traffic from roads where an authorized strike was in progress. The Federal courts held this rule to be a violation of the antitrust law of July 2, 1890, and the brotherhood was ordered to abandon the rule, which was done.

In 1894 an order was made by Judge Jenkins of the United States Circuit Court, sitting in Milwaukee, enjoining the employees of the Northern Pacific (which road was then insolvent and was being managed by receivers appointed by Judge Jenkins) "from combining and conspiring to quit, with or without notice, the service of said receivers." The purpose of the order was to prevent a threatened strike. This order was, however, overruled by the Circuit Court of Appeals, as was also an injunction, issued the same year, enjoining the employees of the Union Pacific Railway (then insolvent and in charge of receivers) from striking when the receivers should put

into force an announced reduction of wages. There was much popular opposition to these injunctions, and it is doubtless fortunate for the public that the lower court was not upheld in its endeavors to prevent men from striking or to compel them to work.

A conspiracy in restraint of trade or commerce among the several States is made illegal by the antitrust law of 1890, and the obstruction of the mails is forbidden by Section 3995 of the United States Revised Statutes. The enforcement of these and similar laws is ordinarily accomplished by indicting and punishing those persons who may break the laws; but in extraordinary times, when a disregard of law is causing or threatening to cause loss of life, destruction of property, or serious public inconvenience, the courts may temporarily exercise their mandatory power of injunction to preserve order and insure the observance of the laws. This power was exercised by the Federal courts in a forcible and effective manner during the strike inaugurated at Chicago by the American Railway Union in July, 1894, the so-called "Debs Strike."

On the 11th of May, 1894, the employees of the Pullman Palace-Car Company, at the town of Pullman, near Chicago, went on a strike. These Pullman employees were members of a large organization of railway men, the American Railway Union, whose president was Eugene V. Debs. On the 26th of June the Railway Union inaugurated a boycott against the Pullman Company by voting that no member of the union should handle Pullman cars. The purpose of this "sympathetic strike" was to tie up the railway business of the country, and thus to force the Pullman Company either to grant the demands of its striking employees or to agree to an arbitration of the grievances. The boycott had the effect of stopping the movement of passenger-trains, and consequently the mails,

into and out of Chicago, and at other places in the United States. At Chicago, violence, disorder, the destruction of property, and the loss of life followed soon after the strike began, and on July 2d the United States Circuit Court, Chief Justice Fuller presiding, issued an order enjoining Debs and the other officers of the American Railway Union, "and all other persons combining and conspiring with them," and "all other persons whomsoever," from in any way interfering with the movement of trains or the transportation of the mails over the 23 railroads that enter Chicago. This injunction was disregarded, and in accordance with President Cleveland's orders nearly 2,000 of the United States regular troops were sent into Chicago between the 3d and 10th of July to assist the courts in enforcing their orders. The United States Marshal also employed about 5,000 deputy marshals. There were in addition to these the police force of the city of Chicago and the 4,000 Illinois State militia ordered on duty between July 6th and 11th. President Cleveland ordered the Federal troops to Chicago without being requested to do so by the Governor of Illinois, the troops being sent "to protect Federal property, to prevent obstruction in the carrying of the mails, to prevent interference with the interstate commerce, and to enforce the decrees and mandates of the Federal courts." The strike was broken by the exercise of military force and by the arrest and imprisonment of the leaders of the strikers, particularly the officers of the American Railway Union. These officers were attached and imprisoned on the 13th of July for contempt of court in disobeying the injunction issued July 2d. This action of the Federal Circuit Court was sustained by the Supreme Court, to which appeal was made by Mr. Debs and the other officers of the American Railway Union.

The courts have made such large use of their power of injunction to intervene in controversies which railway companies may have with each other and with their employees that much has been said in favor of legislation narrowing the scope of equity jurisdiction in these matters. The tendency at the present time, however, seems rather to be against such laws, and in favor of leaving the courts free to take such action in cases of emergency as in their judgment seems best. The Federal judges are men who represent the conservative judgment of the thoughtful classes of society. As the conservative opinion of society as a whole changes and advances, there will be a corresponding change in the nature and scope of the equity powers exercised by the courts.

Railway Receiverships

When a railroad company becomes insolvent—i. e., when it can not pay the interest on its debt or meet its other financial obligations—the creditors of the road may ask a court to take possession of the property. If the court grants the request of the creditors, the property is taken from the management of the directors and officers of the company and put in charge of an officer of the court called the receiver. If the company is not hopelessly insolvent the road will be operated by the receiver, who will cooperate with the creditors and the owners of the road in reorganizing the company and placing it on a solvent financial basis. If, however, the liabilities of the company are found to be so great as to make impossible a return to solvency by means of reorganization, the court will instruct the receiver to sell the property for the benefit of the creditors; but whether the property is sold or not every effort will be made to keep the railroad in operation, because the value of the property invested in a railroad depends almost entirely upon what

it can earn as a railroad. It can not be used for other purposes.

The foreclosure suit which the creditors institute against an insolvent railroad is seldom instituted to compel a sale of the property; indeed, the owners of the junior liens and the stock of the company are usually willing to make considerable present sacrifice to prevent the disruption of the property, because a reorganization of the company makes it possible for the subordinate liens and the stock to become valuable in the future. In order to secure the funds temporarily required to operate the road and to rehabilitate the property, the receiver borrows money by the sale of certificates which constitute a first claim on the property, outranking even the first-mortgage bonds. While the receiver is improving the property with the capital thus obtained, and is increasing the earning capacity of the road, committees representing the financial interests concerned are at work on a plan of reorganization. This plan usually involves an assessment on the stock, and sometimes on the holders of the junior mortgages, and frequently requires the exchange of some of the bonds for stock and the displacement of some of the old bonds with a new issue bearing a lower rate of interest. The purpose of the changes is to reduce the capital charges so that the earnings of the road will be able to meet the fixed charges. When the court having control of the insolvent road is satisfied that a plan of reorganization has been worked out that will insure the solvency of the company he accepts the plan and restores the property to the management of the stockholders. If the receivership has been successfully managed, the court has not only avoided selling the property under the hammer, but has put the road in a better condition for handling traffic. The total capitalization of the company may have been reduced, but that does not always occur; it

has sometimes been found possible to reduce the interest and other fixed charges while actually increasing not only the stocks but the indebtedness of the company.

In prosperous times most railroad companies are solvent, and the courts have charge of but a short mileage; but in times of severe business depression the courts have operated a surprisingly large part of the railway systems of the country. On the 30th of June, 1906, only 34 roads in the United States, with a total mileage of 3,971 miles of line, were being operated by receivers; but on June 30, 1894, there were in the hands of receivers 192 companies, with a capitalization comprising nearly one-fourth of the railway capital of the entire country. During the eighteen months ending July 1, 1894, 43,000 miles of railroads—24 per cent of the total mileage of the country—were taken charge of by the courts. In some instances the duration of the receivership was only for a few months, but in other cases the roads were under the control of the courts for several years. From November, 1893, until November, 1896, the number of miles of railroad in charge of receivers was at no time less than 20,000 miles, the maximum number of miles at any one time being 36,619. It was not until the spring of 1899 that the total mileage in the hands of receivers became less than 10,000. The experience of the railroads in regard to receiverships during the business depressions of 1873 to 1880, and from 1885 to 1887, was similar to their experience during the panic beginning in 1893.

The large number of railroad receiverships in the United States has been the result of several causes, of which the first and most potent has been overcapitalization. In many instances the actual investment for the construction and equipment of the railroad represented but little more than the amount of first-mortgage bonds. The junior liens were frequently sold at a great discount, and the stocks

were distributed as a bonus to the purchasers of the bonds. The securities other than the first-mortgage bonds were used as the inducement by which men were influenced to invest in the enterprise. The value of the stock and to a large extent of the junior liens depended on the growth of the traffic of the railroad. Many roads were highly prosperous almost from the start, and rapidly gave actual value to the fictitious capital. Other companies were not so fortunate. They found that their system of roads had been extended more rapidly than the growth of the country demanded, or that the completion of their lines was followed by a business depression which cut down their anticipated traffic and increased the difficulty of financing their enterprise, or they found that some other company followed them closely with a new and rival line. During the years from 1868 to 1873, and from 1880 to 1885, railways were constructed with great rapidity, particularly in the central and far Western sections of the country, and the tendency toward overcapitalization and speculation was excessive. Many companies found they had overestimated the future increase in their traffic, that competition became keener and rates declined faster than had been expected. The result was insolvency and the temporary management of the roads by the courts.

Some railroads were built almost entirely for speculative purposes by persons whose object was to profit from the construction of the road. Such speculators built the line entirely with borrowed capital, made large sums from the construction contracts, and then permitted the insolvent road to pass into the hands of the security holders.

Now that the country has been generally supplied with railways and the great systems are being grouped by means of communities of interests into a limited number of managements, some of the causes of rail-

way insolvency have become inoperative. Railways are not now likely to be projected ahead of business needs; nor is it now easy (although it is usually possible) for a new company to enter a field already occupied. Consolidation and community of interest in ownership and management have done much to restrain direct competition in rate-making. There is also noticeable an increase of conservatism in railway financiering as the corporations become older and larger. The opportunity of the irresponsible speculator has been greatly narrowed, although he has not been driven entirely from the field. The tendency toward overcapitalization, moreover, is not so general as it was twenty-five years since, but it is still practised to a large degree. Indeed, a prolonged depression would doubtless reveal a number of railroad companies with greater capital obligations than can be met. It is not probable that railway insolvencies and receiverships are altogether a matter of history.

It has been urged against the present system of railroad receiverships that they impose on the courts duties with which the judges are ordinarily not prepared to deal; that they confer on the judges too great power and too much patronage; that our present methods of reorganization of an insolvent company do not cure the evil of stock watering; and that reorganizations under the present plan are unduly expensive. Much, moreover, is made of the fact that the proceedings for receiverships are frequently instituted by the directors of the companies, or those friendly to them, for the purpose of protecting themselves against the real creditors of the company. It frequently occurs that when the directors or officers of a road see that the company is threatened with insolvency they will apply to a court for the appointment of a receiver. In making the application the officials usually suggest one of their own number, often the

president of the company, as the person they would like the court to select for the receiver, and as the judge knows he must secure the services of some one who is familiar with the affairs of the road, he is usually disposed to appoint the person recommended by the applicants. The term "friendly receiverships" has been applied to such a proceeding, and the practise is open to the objection of continuing in virtual control of the road the very person or persons under whose management the company has become insolvent. While the company is in the hands of the receivers it does not have to pay interest on the bonds, and money for the improvement of the road can be borrowed by the sale of certificates. As Prof. Henry C. Adams has said, "the law of receivership was originally intended for the protection of the creditor; but it has been used . . . as a means of carrying the management of large properties through a period of general commercial depression without fear of interference from creditors or from interested parties ambitious of control."

To prevent the objectionable results of friendly receiverships it has been suggested that a law should be enacted stipulating that the first receiver appointed by the court should be a temporary appointee, and that the permanent receiver should not be selected until after the creditors of the company have had an opportunity to be heard. Some persons have advocated the establishment of a special Federal court for the management and reorganization of insolvent railroads. The judges in a special court would become experts, and as there would be but one court there would be no conflict of jurisdiction between different courts. It would be to the advantage of the existing courts to relieve them of the management of railroads. In times of prosperity the need for a special court is not especially urgent, although previous to 1903

there had been no time for thirty years when there were less than 2,000 miles of line in charge of the courts. For half of the time during that period over 10,000 miles have been managed by the courts, and for several years there have been over 20,000 miles so controlled. The mileage of insolvent railroads during the next prolonged period of business depression will hardly be as great as the mileage was from 1893 to 1895, but the mileage will be several times that during prosperous times. During the first ten weeks of 1908, 5,938 miles of railroad went into the hands of receivers. These roads had stock capital of $415,000,000, and debts of $462,000,000.

REFERENCES FOR FURTHER READING

On the power of the Federal courts over railway rates consult:

1. The "granger" decisions, 1877, particularly Munn *vs.* Illinois, 94 U. S., and Peik *vs.* Chicago and Northwestern Railway, 94 U. S.
2. The commission cases, 1886, Stone *et al. vs.* Farmers' Loan and Trust Company, 116 U. S., 307.
3. The Minnesota case, Chicago, Milwaukee and St. Paul Railway Company *vs.* Minnesota, 1890, 134 U. S., 418.
4. The Nebraska Maximum Freight Rate case, 1898, Smyth *vs.* Ames, 169 U. S., 466.

On the employment of injunctions in labor disputes read:

Dunbar, W. H. Government by Injunction, American Economic Association, Economic Studies, vol. iii, 1898.

Stimson, J. F. Labor in its Relation to Law. 1895.

On railway receiverships consult:

Swain, H. H. Economic Aspects of Railroad Receiverships, American Economic Association, Economic Studies, vol. iii, pp. 53–161, 1898. [A concise discussion of the nature and functions of receivers, the history and statistics, the effects and the future of receiverships. The appendix contains a critical bibliography of sources of information.]

Daggett, S. Railroad Reorganization. 1908.

CHAPTER XXVIII

RAILWAY TAXATION

During the earlier decades of railroad construction the need of transportation facilities was so urgent that the tendency of the public was to aid rather than to tax railway companies. The state assisted the companies by making the tax rate especially light or by exempting them from all tax levies for a period of years. This practise of exempting railroad property from taxation was very general, though never universal, before the civil war. Since then public sentiment and legislative practise have favored the taxation of railroads as heavily as other forms of investment, although there are even now a few survivals of the former policy of exemption and of the policy of favoring particular companies with special and exceptionally light taxes. It will probably not be many years before all the railroad systems in each State will be subject to a general State tax law. It will be a long time, however, before the laws of the several States will be uniform or even approximately alike.

The first taxes imposed on railroad companies were the local general property taxes such as were paid by individuals. With the exception of Pennsylvania, where the traffic was subjected to a State tax, the practise in all the States was for the local tax official to assess the real and personal property of the railroads in the same manner as private persons were assessed. The plan of taxation was a natural one for the States to adopt, and was partially justified by

the shortness and local character of the early railroad systems; but the local method of assessment and collection made the tax burdens of the companies different in each locality, and gave the companies an incentive as well as an opportunity to evade taxes. The plan of local valuation levies took no account of the relative abilities of the various companies to pay taxes; and as the railroad systems grew from local lines to those hundreds of miles in length and interstate in character, the necessity for a different method of taxation became apparent.

In 1850 the application of the local general property taxes to railroads was the general rule in the United States, but in 1880 that method was followed in less than one-fourth of the States. The property basis for taxing railroads was seldom abandoned, but in many States instead of allowing local assessors to make the valuation, State officials were charged with that duty, and in most instances the law prescribed the general rules to be followed by the State authorities in determining the cash value of the railroads. Those rules were usually complex and were seldom the same in any two States. In some States the capitalization of the railroads as well as (or instead of) their cash valuation was made the basis of taxation. Another basis of taxing favored by several States was the gross receipts of the companies. All three of these modifications in the original system of a general property tax locally assessed had been introduced into various States before 1880, and since then each plan has been considerably developed and improved. It will be best to describe each of the three plans in turn.

With but few exceptions the property tax is levied on a valuation fixed by a board of State officers, to whom the railroad companies are obliged to make annual reports covering all the details required by the State board. Theoretically the duty of the board is to ascertain the full cash

value of the property owned by each company, and to make that value the basis of the levy. In practise, however, the State board can seldom determine the actual value with strict accuracy. This is shown by the fact that the assessed valuations of different roads frequently bear very different ratios to the net earnings of the roads. The valuations, moreover, are not apt to be changed often enough to make them correspond even approximately with the variations in the profitableness of the railway business. The property tax may be a heavy burden one year when times are bad, and be a relatively light load to carry the next year, when times are prosperous. In spite of its defects, however, the property tax will probably be maintained, because of the popular feeling that the property of railroad companies should be taxed in the same way that the property of individuals is taxed. The property tax, moreover, has the advantages of being capable of yielding the State a large revenue and of being constant in its returns from year to year.

In some States the valuations are fixed and the taxes are assessed by the State authorities, but more frequently the local governments compute and collect the taxes within their respective jurisdictions. The State board fixes the valuation of the entire railroad property within the State, and then apportions the total value among the counties. When the taxes are assessed by the State officials the proceeds, in part at least, of the taxes are divided among the local districts. In most States the local governments still have the power of taxing railroad property situated outside of the company's right of way. It would simplify the tax administration for the States to take over all power of taxing railroad companies, but to do so would deprive the local governments of a needed source of revenue, unless a considerable portion of the amount collected by the State were distributed among the counties

and towns. This plan of State collection and local apportionment has been adopted by a few States, but the plan is not an altogether safe one, because the collection and distribution of large sums by the State governments may lead to waste and misappropriation of funds.

Connecticut and Pennsylvania tax the stocks and bonds of railway companies, and in Massachusetts and New York the stocks are taxed. The par value of the stock is assessed in New York if the dividends equal or exceed 6 per cent. If the dividends declared are less than 6 per cent the "actual" value of the stock is assessed. In Pennsylvania the actual value is assessed, but in other States the basis taken is the market value. These taxes have the merits of being inexpensive to collect and of yielding a nearly constant amount of revenue. They may also be easily and accurately assessed, and those who pay them may know in advance just what their taxes are to be. There is some doubt as to the constitutional authority of a State to tax the railway bonds owned by non-residents of the State. In 1872 the Supreme Court of the United States held that bonds so owned could not be taxed, but in 1900 the Supreme Court upheld an Oregon statute imposing a tax on real-estate mortgages held by non-residents. This recent decision probably overrules the one of 1872.

In several of the States a tax is imposed on the gross receipts of the railroad companies. In Maine, the gross receipts tax is in lieu of all other taxes laid upon the railroads. The same was true of Michigan before the tax laws were changed in 1901. In the other States that make earnings a basis of assessment this tax is but a part of the railroad levies. In Wisconsin railroads before 1905 were grouped into four classes, according to their gross annual earnings per mile of line, and the tax rate was made higher for the groups having the larger earnings. The Michigan and Wisconsin laws were popular for a time, but later be-

came quite otherwise. When Michigan changed her tax law in 1901 she adopted a system of taxing the value of the property of railroads as assessed by a State board, and four years later agitation in Wisconsin brought about a like change. The reason for this dissatisfaction was that the States having the property tax system were deriving a larger revenue from the railroads. It was also urged against the tax on receipts that the amount yielded by the tax fluctuates from year to year, and falls off very largely in times of business depression. This is fortunate for the railroads, but, as the State's fiscal requirements are as large in such periods as in prosperous times, the tax burdens borne by real estate and other forms of property are necessarily made heavier.

Earnings are given much weight in the States where railroads are taxed as property and assessed by a State board. In those States where the railroads are required to pay an annual franchise tax, the value of their franchise is determined to a large degree by the earnings received by the corporations having the franchise. Thus, although the tendency in some States is away from the plan of taxing gross earnings directly and toward the plan of taxing railroads as property, more rather than less consideration is being given to earnings as the basis upon which the State's levies shall rest.

In taxing directly the earnings of railroads it has been necessary for each State to confine itself to the earnings derived from the business carried on entirely within the State. The Supreme Court has held that a tax on gross receipts as such derived from interstate business is a tax on interstate commerce which the States have no power to tax. This constitutional objection is got around by the device adopted in some States of levying an annual license fee or franchise tax upon each company. In Alabama, for instance, the tax on earnings is a "license

fee." The Supreme Court has upheld the validity of such State taxes, although the value of the franchise taxed results from interstate as well as State traffic.

A tax on the net receipts of railroads has frequently been advocated as one possessing great merits, but the system has not yet been adopted by any of the American States. In England, Prussia, and France the net receipts of the railroads is one of the bases upon which tax levies are made. This method of taxing railroads is theoretically attractive for several reasons. A tax on net receipts would not be open to the objection sometimes urged against one on gross income, viz., that it would discourage expenditures for improvements of the service and the equipment. The distribution of burdens among the several companies affected would be equitable if net earnings were made the basis of assessment, and the administration of the tax law would be a simple task, provided each State before passing the tax law should require the railroads under its jurisdiction to adopt a uniform and correct system of accounting whereby the State might be able to determine whether the companies actually reported their real net earnings. This, however, suggests the practical objection to making the net income the basis of taxation in the American States. The States generally do not insist upon a system of railroad accounts and reports that would enable the Government to administer successfully a tax on net receipts. When the administrative machinery has been sufficiently developed the incorporation of a tax on net receipts of railroad companies into the general system of railroad taxation will be advantageous. Net receipts should not be made the sole basis of railroad taxation, because the returns from the tax would fluctuate largely and would be especially small in periods of business depression.

In theory a tax on the franchise of a corporation is a fee,

or a payment, which the State exacts in return for something of value that has been given to the corporation. In many instances, and this is particularly true of street-railways, the franchise given by the State is a very valuable part of the company's property. In over half the States the railroad companies are required to pay a franchise tax. The value of the franchise is determined for purposes of taxation in various ways in different States. The receipts, profits, dividends, value of the capital stock, the amount of bonds, and numerous other criteria of value are adopted in fixing the worth of the franchise. Indeed, the franchise tax does not represent any specific kind of assessment, but is rather an indirect tax upon some one or more things that give value to the company's franchise. From the legal standpoint the franchise tax has great importance, because it enables the States to avoid several difficulties. The constitutions of some States require the taxes on property to be uniform, but by means of a franchise tax the levy on railroad property may be very different from that on other forms of wealth; the inability of the States to tax interstate commerce directly is overcome by imposing a tax on the franchises of companies engaged in that commerce; again, the company may own property located outside the State, and thus not be subject to taxation by the State, but, by taxing the company's franchise, that property can be levied on; and, although a State may legally tax directly only that portion of the capital stock that is employed by the company in conducting its business within the State, the entire capitalization may in effect be reached by means of an assessment against the value of the franchise. The elasticity of the franchise tax is making it a popular method of taxing railroad and other large corporations.

Whether the basis of the tax levy be made the property of the railroad company, or its capitalization or its earn-

ings, it is necessary for each State, in theory at least, to confine its taxes to the property within its boundaries. As most railroads are interstate in extent, some method of dividing the company's property or taxable elements among the several States in which its lines are located becomes necessary. The plan generally followed is for each State to tax that share of the total rolling-stock, capitalization, or earnings of the company that is represented by the ratio which the mileage of line within the State bears to the company's total mileage. This method of interstate prorating of taxes has been upheld by the United States Supreme Court.

The methods of taxing railroads are varied, and the same corporation is usually taxed by several States. From this it frequently results that railway property is subjected to more than one tax. This is called double taxation. Property that pays more than one tax may or may not be excessively taxed. Double taxation is not necessarily unjust taxation. The imposition of more than one tax upon a railway or other property may be caused in three ways: A State may place more than one tax on the same property; two States may tax the same object; and, third, the taxation of different persons or owners may involve double taxation of the same property.

In taxing railroads it is not the practise of the States to assess both the property of the company and the bonds or indebtedness of the company. Nor do any of the States tax the stock of the company without first deducting from the value of the stock the amount of the property that has been taxed. To tax both the securities and the property would be double taxation, and this has usually been avoided.

Double taxation resulting from levies made by separate States has not been altogether prevented. The railroad company, however, seldom pays taxes on the same

property to more than one State, because property is assessed and taxed only by the State in which it is located. In the case of rolling-stock or floating equipment there is usually a prorating among the States on the basis of proportionate mileage. Each of the States now taxing railroad securities endeavors to assess only that part of the total capital employed in the business conducted within the State. It is legal for each State to tax all the stock of the railroad companies having their home in the State, but this power is not exercised. Double taxation is most apt to result from taxing receipts, usually by means of franchise taxes. Each State may tax its railroad corporations upon their entire gross receipts derived from traffic carried on without as well as within the State, provided the form of the tax is that of a franchise tax or fee. These franchise taxes are usually not high, and if double taxation results from them the burden, if any, is not large.

Double taxation is sometimes caused by laws which tax a corporation on the basis of its capital stock, and also tax the individual holders of the shares. Such laws are not to be commended, however, not so much because the double taxation is inadvisable as because securities held by individuals are easily concealed from the assessor. Tax laws that can not be enforced are unwise, and there is a growing tendency to exempt the individual holdings of corporate securities, when the corporation itself is taxed either on its capitalization or by other methods.

The lack of uniformity among the States in the taxation of railroads results in the unequal distribution of the tax burdens among the railway systems. In some sections of the country the railroad taxes constitute twice as large a share of the net earnings as they do in other parts of the United States. It would be somewhat better for the railroad companies were the systems of taxation simplified, re-

duced in number, and made uniform in principle (not in rate or amount of taxes) in different parts of the country. There is manifest a tendency for each State to centralize the administration of its tax laws, and as time goes on the better systems of taxation will gradually be adopted by all the States. Complete uniformity in the practises of so many States can hardly be expected.

One method of securing a uniform system would be the substitution of Federal taxes on railroads in place of those now imposed by the States. The United States could tax only interstate transportation, but by so doing it could reach practically all the railroads. In order to administer a system of taxes on interstate commerce, the United States Government would be obliged to secure certain information that it does not now possess regarding the finances and the traffic of railroads. The possession of that information and the exercise of the taxing power would assist in making more effective the governmental regulation of transportation. It seems logical that the development of great systems of interstate railways and the consolidation of those systems into a small number of groups should lead to the change from State to Federal taxes on railroads, just as local taxation has given place to State levies. But the States will hardly agree to give up the taxation of railroads. They need the revenue to be obtained from that source, and if the United States should deprive the States of the proceeds from railroad taxation, the funds (or a large share of them) thus obtained by the National Government would need to be distributed among the States. Such a system of taxation, involving the collection of a large Federal surplus to be distributed among the States, is hardly to be recommended, at least at the present time.

During the fiscal year 1906 the total amount of taxes paid by the railroads in the United States was $74,602,-

171. In each of three States, Illinois, New York, and Pennsylvania, the payments exceeded $5,000,000. The heaviest taxes per mile of road were paid in Massachusetts, which received $1,683 per mile. Connecticut came second, with taxes of $1,220 per mile of road. Although the total railroad taxes paid in Illinois amounted to $5,364,330, the sum per mile was only $453. Several States were ahead of Illinois in the sum of the payments per mile of line.

Over seven-tenths of the total amount received came from taxes levied directly on property—a fact showing that property is still the favored basis of levies. In addition to the property tax, the receipts from property valuations fixed with reference to the value of stocks and bonds and with reference to earnings and dividends slightly exceeded $8,500,000. Specific taxes on stocks and bonds yielded less than $1,150,000, and direct or specific taxes on gross earnings and dividends produced about $8,882,000. This last figure is of especial significance, because it shows that although writers have for some time been urging a change from levies based on valuations to those placed on gross or net earnings, the States have been slow to make the substitution. The tax on gross receipts is growing in favor slowly, if at all.

Taking the railroads of the United States as a whole, the sum paid by them for taxes is not excessive. In 1906 the tax payment equaled only one-half per cent of the total amount of stocks and bonds, and appreciably less than 3 per cent of the gross earnings from operation.

The general tendencies manifest in the legislation of the States regarding railroad taxation may be summarized as follows:

1. Railroads are being taxed by a system different from that applied to individuals, and the tendency is to

centralize the administration of railroad taxes by placing them in charge of State boards.

2. Taxes on property though most in favor are supplemented by levies on capitalization, profits, and earnings.

3. The property tax locally assessed on railroads is coming to include only real estate.

4. Corporation taxes in the form of organization fees and annual franchise taxes are growing in favor.

5. The tendency is to exempt from taxation the individual holdings of securities and to tax the corporation itself.

6. The States are endeavoring as far as possible to tax in the same manner all railroad corporations, whether chartered by the State levying the tax or by some other State.

REFERENCES FOR FURTHER READING

McCrea, R. C. 1. Taxation of Transportation Companies, Report of Industrial Commission, vol. ix, pp. 1005–1091. [This monograph by Dr. McCrea covers the subject in detail and contains a good bibliography of the literature of the subject.]

2. Tendencies in Taxation of Transportation Companies in the United States, Annals of the American Academy of Political and Social Science, vol. xv, pp. 355–380, 1900.

Report of the Industrial Commission, vol. iv, pp. 599–610, testimony of Prof. E. R. A. Seligman; vol. ix, pp. clxxxix–cxciii and 373–384, testimony of Prof. Henry C. Adams.

Railways in the United States in 1902. Part V. "State Taxation of Railways and other Transportation Agencies." A report prepared for the Interstate Commerce Commission by its Statistician.

Plehn, Carl C. Revenue Systems of State and Local Governments in 1902. Bureau of the Census, Washington, D. C.

State and Local Taxation. Addresses and Proceedings First National Conference, National Tax Association, 1907.

CHAPTER XXIX

THE PROBLEM OF GOVERNMENT REGULATION

The problem of the government regulation of railways varies in its concrete manifestation from time to time, but the general problem is a permanent one. The aim sought by the carriers is an increasing business at rates that will yield as large profits as can be obtained without interfering with the growth of traffic; the interests of the public served by the railroads require that the service shall be progressively efficient, that the charges shall be as stable as general business conditions warrant, and shall be neither unreasonably high nor unjustly discriminatory as between persons, places, or kinds of traffic. It was hoped for a time that the interplay of competitive forces and the struggles of rival interests would result in an equitable and satisfactory adjustment of the relations of the carriers with each other and with the public, but the entire history of railroad transportation in every country is an illustration of the inadequacy of the theory of non-interference on the part of the government.

There are two parts to the permanent problem of government regulation of railroad transportation, two duties devolving on the state. One is to adjust the relations of the carriers with each other; the other is to maintain an equitable relationship between the public and the carriers. The theory concerning the interrelations of the carriers that has generally been adhered to in the laws of the United States and the several American States has

been that the several railroad companies should act independently and should actively compete with each other as regards traffic and rates. Neither pooling arrangements nor agreements concerning the making and maintenance of reasonable rates have been sanctioned by law.

Just what effects have resulted from the adherence to this unsound policy can hardly be determined, but two facts are certain: (1) The policy made the prevention of unreasonable discriminations more difficult. Whether they could have been eliminated even by allowing the rival railways to cooperate under governmental supervision may possibly be somewhat doubtful; but that the effect of attempts to compel competition was to increase discriminations there can be no question. (2) The laws against pooling and cooperation of rival carriers have not kept the carriers apart. Since 1898 the railroad companies have been developing larger systems and greater unity of management at a rate few people would have dared to predict. Cooperation among railroads in rate-making and in the division of traffic free to move by more than one route is being accomplished by methods that are highly efficient. Indeed, that part of the problem of government regulation of carriers which has to do with the maintenance of the proper interrelations among the railroad companies has assumed a new phase.

To the extent that the laws against cooperation of rival carriers were effective, it became the duty of the Government to endeavor to enforce such interrailway relations as would protect the carriers as well as the public against the harmful effects of unbridled competition. Now that the carriers are able to cooperate with great efficiency it has become the duty of the Government to scrutinize closely the methods and results of that cooperation to make sure that the railway companies do not exercise, in

such a way as to do injustice, their monopoly powers, which, though partial, are yet strong enough to demand public supervision.

The Government's obligation to maintain an equitable relationship between the carriers and the public is as great to-day as it ever has been. The problem has a different form than it has had in the past or may have in the future, but in essence the question is a permanent one, and consists in harmonizing as far as possible the interests of the private corporations of a quasi-public character engaged for profit in the performance of a service of a public nature, with the interests of the individuals, the localities, and the general public served by the carriers. This general problem is a continuing one, but the specific reason for Government regulation will vary from time to time, and may be, as it was in 1870, to secure cheaper rates to the seaboard for the agricultural products of the Central States; or may be, as was particularly the case during the period from 1870 to 1890, to adjust the rates charged at the small local towns and at the large cities; or the reasons may be, as at the present time, to secure relatively reasonable rates for rival areas of production and for rival economic interests in the same area of production. The progress of railway consolidation may again give prominence to the question of extortionate rates, for although the railway service is not a complete monopoly, there is no doubt as to the ability of a consolidated control unrestrained by public regulation to exact higher charges than justice would warrant.

The problem of railway regulation has been merged to some extent with the general and larger problem of the public control of corporations. This has come about mainly in two ways: by the application of the Sherman antitrust law of 1890 to railroads and by the passage of the Elkins law in 1903. In enacting the Sherman anti-

trust law Congress had only industrial combinations in mind; but the rulings of the Supreme Court have made the law an important part of our legislation for the regulation of railroads. Indeed, the interpretation of the law thus far has been to give it a wide application to interrailway relations and a more limited influence upon the relations of industrial corporations with each other. As a measure for the control of interrailway relations the law is faulty in that it makes illegal practically all cooperative action on the part of rival carriers. The public interest requires the joint action of carriers in making and maintaining rates, and the problem of preventing railway discriminations has been complicated instead of simplified by the Sherman Antitrust Act. There are undoubtedly various kinds of combinations among railroads that are opposed to the public welfare, and it is quite possible that such deleterious combinations may be reached by the law of 1890. The necessity seems to be for the modification rather than for the repeal of the law.

The urgent demand for Federal legislation for the regulation of the "trusts" led to the passage of the Elkins law, which was intended to prevent unjust discriminations in railway charges. Instead of amending and developing the Sherman act of 1890, Congress chose to give the new Department of Commerce and Labor certain inquisitorial powers over corporations, and, by the Elkins law, to make it more dangerous and more difficult for the large shippers to secure special and discriminating rates. The theory of the Elkins law was that the greatest advantage over the independent producer which the "trust" can secure is a special rate from the railroads, and the framers of the law believed that the elimination of unjust discriminations would help to prevent large corporations from oppressing the public. The thought back of the Elkins law, as an antitrust measure, was that with equality of advan-

tage as regards transportation, the small producer can prevent the large producer from monopolizing the field of production and exacting extortionate charges from the consumer. The law proved successful and three years later it was incorporated in the Hepburn act. The theory upon which the law is based has much to commend it.

The Elkins law immediately strengthened the legislation for the regulation of railroads. The corporation, as well as the officer or agent, became liable to prosecution for a violation of the law; the imprisonment clause of the interstate commerce law was repealed, but was restored by the Hepburn act of 1906. The penalty for deviating from the published and lawful rates is a heavy fine of not less than $1,000 or more than $20,000 for each offense, and the acceptance as well as the offer of a rebate or discrimination is made a misdemeanor. The Elkins law also gave statutory authority for the issue by the United States circuit courts of writs of injunction ordering carriers not to charge less than the published rates and not to make any discrimination forbidden by law. Although this authority had been exercised by the Federal courts in 1902, there was some doubt as to the power of the courts to take such action. The Elkins law empowered the Interstate Commerce Commission to petition for such an injunction whenever it has reasonable ground for belief that discriminations are being practised, and the law makes it "the duty of the several district attorneys of the United States, whenever the Attorney-General shall direct, either of his own motion or upon the request of the Interstate Commerce Commission, to institute and prosecute the proceedings provided for by this act." The law of February 11, 1903, insures expeditious and speedy determination by the Circuit Court of all cases brought for the enforcement of the law. "An appeal from the final decree of the Circuit Court will lie only to the Supreme

Court and must be taken within sixty days from the entry thereof."

While legislation has fixed the general scope of the governmental regulation of transportation, the efficiency of governmental control has been determined mainly by the actions of the courts in interpreting the law and in exercising their equity powers. There were few changes made by Congress in the act to regulate commerce passed in 1887, until the Elkins act of 1903 and the Hepburn law of 1906 were enacted, but the decisions of the Federal courts resulted in an important organic growth in the laws to which public carriers were amenable.

With the exception of the act approved February 11, 1893, strengthening the power of the Interstate Commerce Commission to compel witnesses to testify and produce documentary evidence, the changes made in the law of 1887 before the passage of the Elkins act related to relatively minor details. Two supplementary laws of importance to the public welfare were enacted. One act was the safety appliance law of March 2, 1893, requiring the railroad companies to equip their cars with automatic couplers and their engines and cars with power-brakes. The other act was approved March 3, 1901, and requires all railroad companies engaged in interstate commerce to make full monthly reports to the Interstate Commerce Commission of all accidents. These supplementary acts, while constituting a valuable addition to our laws, did not deal with the main problem of government control of transportation, the regulation of rates and the prevention of discriminations. Though annually urged by the Interstate Commission to recast and strengthen the main provisions of the act of 1887, so that the commission might at least possess the powers which that law was intended to confer on that body, Congress did not act until it passed the acts of 1903 and 1906, when the agitation for the regu-

lation of trusts and large corporations resulted in the Elkins and Hepburn laws to restrict discriminations and regulate railroad charges.

Although Congress was very slow to change the act of 1887, the decisions of the courts had, by 1897, left the Interstate Commerce Commission without effective power to adjust railway charges. The task of protecting shippers from unjust transportation charges had fallen increasingly to the Federal courts; but although the activity of the courts had been beneficial, the necessity for the further development of legislation regarding railway regulation and the desirability of keeping the Interstate Commerce Commission equipped with effective powers became apparent by 1903. For, however active and intelligent the courts may be in dealing with transportation questions, they can not adequately cope with the economic problem of rate adjustment. The actions of the courts must be mainly negative and preventive; their methods of procedure are such that the courts are not so well adapted as a commission is to deal constructively with such a complicated and varying economic problem as the supervision of transportation charges and their equitable adjustment among the rival social and economic interests. This fact is now generally recognized in the United States, although there are differences of opinion as to the nature of the powers that should have been given the Interstate Commerce Commission. This accounts for the fact that there was a virtual deadlock in legislation for some years before President Roosevelt's great influence brought about the enactment of the Hepburn law.

The interest of the public in the problem of railway regulation is lessened by business prosperity, because during such a period railway discriminations are much less frequent than during years of industrial depression. When overrun with traffic a railroad company may be expected

to observe its published rates in its dealings with all people except possibly a few of the largest shippers who are in a position to offer traffic in train-load lots to two or more railroad companies. But the elimination of personal discrimination due to unlawful deviations from the published rates does not end the necessity for Government regulation. A proper adjustment of rates means, first, that the published rates shall be what they ought to be, and second, that the published rates shall be maintained until they become unreasonable and others are substituted for them according to methods prescribed by law. Inasmuch as past experience has clearly demonstrated that the interplay of rival private interests can not be expected to secure the equitable adjustment of railroad charges, we must in the future, as we have in the past, endeavor by effective public regulation to minimize the inequities certain to arise in the charges imposed by the carriers engaged in performing the transportation service for a country so large as the United States.

The regulation of railroads in the United States is apparently not to be accomplished by means of Government ownership. The commission system has been on trial in the States since 1869 and in the National Government since 1887, and the results accomplished have been fairly satisfactory. The system has not been a failure. The success of the Federal commission has been far less than it might have been had the demonstrated defects in the law of 1887 been more promptly corrected; but the wisest plan for the United States to follow, at least in the immediate future, is to improve the methods and agencies of regulation now being employed, rather than to attempt the enormous task of purchasing and operating two-fifths of the railway mileage of the world.

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